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THE RAILWAY GAZETTE

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An index to the 109th volume of THE RAILWAY GAZETTE, covering the issues from July 4 to December 26, 1958, has been prepared, and is now available free of charge on application to the publisher.

N.U.R. Runs Light

IT is difficult to see why surprise should be felt at the negative reactions of A.S.L.E.F. and T.S.S.A. to the N.U.R. determination to present a pay claim. That decision obviously was made only after continual pressure from rank-and-file membership, and it is common knowledge that the N.U.R. General Secretary, Mr. S. F. Greene, was among the five dissenters to it. A mere voting majority—in this case, of 13—cannot turn error into truth, or unwisdom into sagacity: in fact, it is not unusual for later events to show the minority view to have been right. And though the heat of discussion may create a fog of uncertainty, this fog will not be present for those who come unheated to the fray. Both Mr. A. Hallworth and

Mr. W. Webber, General Secretaries respectively of A.S.L.E.F. and T.S.S.A., are as well aware as Mr. Greene of the hard facts relating to railway pay, and of the careful and therefore necessarily unhurried nature of the investigation into it now being undertaken. Fortunately for their unions, Mr. Hallworth and Mr. Webber represent relatively small and, on the whole, much better-informed memberships. They can thus continue to exert judicious guidance which is accepted with that trust without which leadership cannot continue. It may be that the determined opposition expressed by these two unions will enable Mr. Greene to bring back the militant section of his executive, and through it, the main body of N.U.R. membership, to a sense of responsibility and good sense. It would be regrettable if the N.U.R. should depart from its normally high standard of behaviour and that it should choose so unpropitious a time to do it as the present. Recent years have contained too many examples of labour relations brought to a disgruntled head by rash and unofficial union action. The resultant harm has lingered and will continue to remain long after the actual events causing it have been forgotten.

Redundancy Talks

IT is understood that a measure of progress has been reached during the negotiations between the unions and the British Transport Commission on a redundancy scheme for railway workshops staff. Although the Commission has refused to meet the full union demands, it appears that it has agreed on the transfer for a stated period of redundant men to other work, when available, without change of pay, although the new work may carry a lower rate. Some help is to be given with removal expenses, and apprentices are not to be dismissed during training. Complete agreement was prevented by differences over compensation. The unions have dropped their claim for a lump sum of £25 for each dismissed man plus one week's wages for every year of service. Instead, they asked the Commission to improve on its own offer. This is understood now to offer compensation for 26 weeks for a man with 40 years of service and for seven weeks for a man with five years. Compensation would be on the basis of £4 1s. 8d. a week for skilled and £3 10s. 4d. for unskilled men. There are about 120,000 railway shopmen. Nearly 3,000 have been dismissed during the past two years.

The High Cost of Quality

THE pressure continually exerted on modern industry by rapidly-changing social conditions to produce more and cheaper goods, while essential for the development of some activities, should not be accepted as a decisive factor in purchasing. Under a different social order, quality was an inherent expectation in the bespoke article which, if more expensive than its cheaper counterpart produced for a wider market, possessed lasting qualities of performance and appearance. British engineering has built its reputation on the quality of goods made to order: the proportionately high cost of these compared with that of more standardised products has been counted a worthwhile investment. The modern tendency to accept the principle of "trading-in" the partly-worn article for the latest model can subtly affect a buyer in his choice of purchase. Expectations of basic quality are changing in many markets today: as goods become cheaper, they also become easier to replace. Thus, the price factor is assuming undue importance. This is an attitude which should be resisted in the engineering world, where the paramount requirements should be lasting qualities and specific suitability, and not price alone.

Chinese Railways' Movement Problems

LIKE the railways in most countries which are being rapidly industrialised, those of China are being heavily burdened. There have been, and are, congestion and delays, but not to the extent of the "chaos" which according to some reports exists on the Chinese National

Railways. That these have withstood the strain as well as they have done is partly attributable to the training received by some Chinese railway officers in their younger days from the British and other officers who then managed or supervised railways in China, partly to sound practices introduced by the European managements, and partly to the British-made equipment used. Despite the progress made by the U.S.S.R. railways in the development of a.c. electric traction, the Chinese, who are converting considerable mileages at 50 cycles, rely on the West for technical assistance and material in this field, as is shown in the orders for electric locomotives from French builders. Interest is now reported to be shown in diesel traction equipment manufactured in the West. The demands on the Chinese railways are likely to continue to be exacting for some time, which may result in further resort to electric and diesel traction and to improvements in signalling to help solve movement problems.

Tokyo-Osaka Standard Gauge Line

CONSTRUCTION is to start this month on the Japanese National Railways 344-mile standard-gauge line between Tokyo and Osaka, the subject of an editorial article last week. The first task to be undertaken will be the excavation of the new Tanna Tunnel between Atami and Numazu in Shizuoka. This is expected to be one of the biggest works in the construction of the trunk line. The tunnel will be some five miles long. The Japanese Government has allocated some £3,000,000 for the 1959 financial year. The money will be used mainly for the purchase of right-of-way. The J.N.R. estimates the cost of land purchasing at some £13,000,000, but 27 per cent of the total land required has already been purchased. The total cost will be around £170,000,000, including locomotives and rolling stock. Passenger trains will be designed to operate between Tokyo and Osaka in 3 hr. and express goods trains in 5½ hr. The passenger stock will be multiple unit, similar in design to the "Kodama" which was introduced into the Tokyo-Osaka service last November, and described in our issue of December 19, 1958. The target date for completion of the line is late 1963, which envisages very rapid construction.

New Station at Banbury

THE new railway station at Banbury, which is described and illustrated in this issue, is a fine example of contemporary architecture and a typical indication of the progressive attitude of the Western Region of British Railways. The extensive and imaginative use of concrete, glass, and toning colours combine to produce an effect of lightness and space. This effect finds its greatest expression in the magnificent staircase which leads from the ground-floor ticket offices to the public rooms on the dual-purpose bridge. The Region's choice of Banbury for its first modern station reconstruction was well made. The station had for long suffered from a track layout which had been designed for more leisurely traffic than that now constantly passing along the main London to Birmingham line. The track improvement which has been made possible by the overall reconstruction has resulted in better services doubtless welcome to the many hundreds of passengers who pass through the station each week. Also welcome must be the efforts to ensure comfort for waiting passengers, a factor of especial importance when considering overseas visitors.

Midlands to Norfolk via March

ACCCELERATIONS of up to 96 min. eastbound and 87 min. westbound in holiday trains at weekends this summer between the Midlands and East Anglian coast resorts are justification for closing most of the Midland & Great Northern line at the end of February. Trains from Rugby, Leicester, and other stations in the Midlands to the Norfolk coast resorts will be routed via March and the Ely avoiding line, by the Great Eastern route. The absence of the single-line working which was necessary on the M.G.N. line, and the extension of non-stop running

have facilitated the cuts in journey times. Because access to Yarmouth, Cromer, and Sheringham is now from the south, via Norwich (or Trowse curve), the distances between those resorts and the Midlands are increased by 10, 41, and 49 miles respectively, but westbound from Sheringham there will be some accelerations compared with the old M.G.N. route. It will be interesting to see, in due course, details of the schedules, loads, and motive power to be used.

Provision for Subsidence

NEAR Elton Viaduct, between Crewe and Sandbach, British Railways, London Midland Region, the ground has been seriously effected by subsidence caused by brine pumping. Between 1892 and 1956 this amounted to 16 ft., the yearly average fluctuating between 2 in. and 9 in. The present average is 8 in. and it is considered that the subsidence will go on indefinitely. To counteract this downward movement special foundations have been installed to support trackside structures for the overhead electrification of the line. They are described elsewhere in this issue. They consist of large reinforced concrete rafts below the running tracks and extending to the trackside which carry the actual foundations on which the steel masts are bolted. Fabricated lattice overhead structures which span the tracks are fitted to the masts rugby-post style to allow for adjustment after subsidence. Extra height can be obtained by fitting ferrules and extensions to the bolts on the top of the foundation. The mast can be bolted in one of two positions on the foundation so as to allow for lateral movement.

S.N.C.F. Improves Single-Line Working

THE French National Railways system includes a considerable mileage of single line, often on important cross-country routes traversed at times by fast trains. Under the modernisation plan a number of stations are being re-signalled for an accelerated service, as between Alès and Arvant, on the line from Paris to Nîmes through Clermont-Ferrand. The older arrangements date from the period when the section was owned by the Paris, Lyons & Mediterranean Railway. According to these trains invariably have to reduce speed and take the left-hand line at crossing stations, with very simple signalling and key locking. They are being abandoned in favour of the "direct route" method, allowing fast trains to run through on a straight track, with improved signalling, point operation and bolting, and giving about 10 per cent gain on most journey times. Key interlocking is being retained, however, but modified to suit the altered layouts. The switching out of a station, a cumbersome process originally, is now readily effected in a few minutes. The route is worked under interlocking block and therefore no exchange of tokens is involved.

New Southern Signalling

AN article in this issue gives the principal particulars of two new colour-light signalling installations brought into use on the Southern Region, one between Clapham Junction and Richmond, in the Western Division, the other extending from Factory Junction to Herne Hill and Nunhead, via Brixton, carried forward later from Nunhead to Ravensbourne. The former brings a much desired improvement on a section having dense traffic, difficult to handle by manual signalling in the peak hours, and includes a route relay signalbox at Barnes, replacing two mechanical boxes. An interesting feature is the operation by power of the gates of the crossing on the Chiswick line. It is impossible at present to abolish the three other crossings on the line to Richmond and their control has had to be incorporated in the new arrangements. The second installation is noteworthy as marking the first stage in the very extensive scheme, to be completed this summer, which will give four tracks from Shortlands to Swanley and continuous colour-light signalling from Victoria to Ramsgate.

The Single-Needle Bell

IN the description previously mentioned of the S.R. Eastern Division signalling reference is made to introduction of up-to-date magazine type train describers and also to the retention on certain sections of the so-called "single-needle bell" instruments for giving information about the class and destination of approaching trains. As this apparatus is very little known we may perhaps say that it dates back to the time of the old L.C.D.R., which, in the London area, did not use ordinary block bells but provided instead single-needle telegraph instruments fitted with bells on the back. These bells rang once for each beat of the needle, to right or left, and originally in the case of both outgoing and incoming signals but later with the latter only. The ordinary block bell signals were exchanged according to the prescribed code and then supplemented by others, formed according to the single-needle alphabet, to denote the route or other necessary information relating to the train. This apparatus was, as far as our information goes, never used anywhere else, remaining always peculiar to the lines originally forming part of the L.C.D.R. system. It was very quick to work and greatly liked by the signalmen who, as was general in those days, had to be familiar with speaking telegraph instruments.

The Central Line Fire

"IT is easy to be wise after the event," justly remarks Colonel D. McMullen in his report, summarised in this issue, on the fire which broke out in a Central Line train on July 28, 1958, between Shepherds Bush and Holland Park. The risks attendant on electrical operation in tunnels, especially tube tunnels, have long been appreciated and very strict regulations designed to meet them enforced for many years. As far as Great Britain is concerned the need for them was brought home by the Dingle train fire on the Liverpool Overhead Railway in 1901. It is nevertheless practically impossible to foresee every contingency or be sure of covering every condition that may arise by watertight rules, nor can one be certain that even when such exist everyone concerned will act in perfect accordance therewith or invariably remain calm and collected. The public cannot expect perfection in these respects but it has a right to be assured that, should some incident unfortunately occur revealing a weakness, whether technical or administrative, the lesson it teaches shall not only be learned thoroughly but every practicable step be taken to implement it with the minimum of delay. London Transport did not fail to do this directly the facts became known and their great gravity evident. Little imagination indeed is required to picture what might have occurred had the train been filled to capacity.

New Wagons and Yard Methods

CONSIDERABLE attention has been given in several countries during the last three or four years to accelerated loading and unloading of railway wagons, partly by the use of mechanical-handling improvements such as fork-lift trucks and pallets, and by bulk-handling methods, and also to a substantial extent by the use of developments in the wagons themselves. An example of the latter is seen in the SEAG sliding-roof/sliding-side wagons and lift-dump wagons, an essence of which is the combination of the special feature with what is a standard general-purpose wagon, so that empty mileage can be reduced. Extensions of this general trend in improving wagon turn-round were noted in a paper on mechanical marshalling of railway wagons in works sidings, presented recently to the Institution of Mechanical Engineers by Mr. G. W. Grossmith. These methods aim at reducing shunting times and costs, and thus supplement the loading and unloading improvements mentioned above in an endeavour to reduce the non-travelling time of railway wagons, which in Britain sometimes amounts to 20 hr. a day. Many new yard developments are under way, not only in the automation and televising of wagons in the reception

sidings and as they go over the hump, but in remotely-controlled shunting power, in automatic control of a sequence of wagon movements without applying the wagon brakes, and, indeed, for certain types of yard, in new principles of shunting and marshalling.

Railway Superannuitants

PRESSED at Question Time in the House of Commons recently, the Minister of Transport & Civil Aviation, Mr. Harold Watkinson, informed Members concerned at the position of aged railway superannuitants that he had once again drawn the attention of the British Transport Commission to this difficult problem. He added that in view of its present financial position, which he described as extremely precarious, he found it difficult to press the Commission if, in its view, it could not afford to make any increase. That may well be, but it seems hard that this group of retired railway servants, to describe them by an expression appropriate to the generation to which they belong, whose claim for an adjustment of their retirement annuities to meet the higher costs of living is admittedly justified, should have it denied because of the Commission's financial difficulties. With the railways receiving Government assistance to the order of some £85 million on account of last year, the cost of such an adjustment can only seem insignificant.

These railway superannuitants are in similar position to many elderly people in receipt of pensions determined at a time when the value of money was greatly different from what it is today. They are among many victims of the post-war inflation. In some ways, however, the Commission has a special responsibility towards them, as it stems from the former railway companies which it took over. Because they had their own superannuation schemes, the companies' employees did not come within the scope of the national insurance scheme, or old age pension scheme as it then was. Most of the recipients of annuities, therefore, receive no benefits except from this source, which until payments were increased in April, 1956, often were as low as 3s. or 4s. a week. After consultations between the Minister and the Commission a scheme of pension supplements was then introduced but the maximum supplement payment was fixed at £28 a year. Welcome no doubt as this additional sum was to the aged railwaymen who retired before 1951, it still left most of them in poor financial straits. Since then the cost of living has risen further. Hence the recent agitation for a further increase. In fact as one Member stated, the pensions have now become "utterly ridiculous."

No wonder a motion signed by some 50 Members from both sides of the House stands on the Order Paper demanding that because of the exceptional hardship that has resulted from declining money values to British Railways superannuitants, many of whom receive no National Insurance benefits, action be taken to alleviate their hardship. Mr. Harold Watkinson has shown sympathy for these long-suffering pensioners throughout his period of office, but has always taken the no doubt correct position that the Commission is responsible. All he admits to is power to draw its attention to the representations that are made to him. Theoretically that may be the position, but as the Minister's relations with the Commission in other fields, such as influencing economies, are not so remote or ineffective, it seems reasonable to expect that the forceful conveyance of the views of Parliament could bring the desired result. It would seem that this refusal of the Commission to make any adjustment on financial grounds is disproportionate to the size of its operations. Wage increases over recent years have cost it many millions. It seems unreasonable to expect former employees convinced of the justice of their claim for better treatment to accept that they should be in worse case than present employees because the legal obligation is not there. A gesture from the Commission towards them by an adjustment of the supplements payable to meet the rise in living costs since the amounts were fixed in 1956 would be well received and cost it proportionately little.

Experimental Application of Ferrites

IN certain forms of long-distance signalling controls, electronic equipment for some time has been successfully applied, as it has been, more recently, with some forms of track circuiting. The application of ferrites to railway signalling systems was the subject of a paper read recently to the Institution of Railway Signal Engineers by two physicists, Mr. G. R. Cass and Mr. J. Sagues, of the Imperial College of Science & Technology. The properties of ferrites, used in the construction of computers and related apparatus, offer the possibility of effecting certain circuiting functions without the aid of relays and their accompanying moving armatures and contacts. Elimination of these, if only to a limited extent, might afford advantages from more than one point of view, always assuming no relaxation of safety measures or other essential requirements. The authors of the paper have been responsible for carrying out, to the order of the British Transport Commission, an investigation into this question and producing a first small experimental set of apparatus adapted to carry out some of the functions involved in signalling an ordinary double-line junction. The set was shown at the meeting.

The Signal Engineer of British Railways, Western Region, Mr. A. W. Woodbridge, has been associated with Mr. Cass and Mr. Sagues in the work, as adviser responsible for stating the conditions to be fulfilled from the safety and operating points of view, which has ensured that the controls embodied in the apparatus conform with correct practice. All three have emphasised that as yet a simple preliminary experiment is all that has been effected. The attempt has been to find whether, using certain basic conceptions, something could be constructed to work well enough to offer a reasonable prospect of development after the laboratory stage. It was clear from the discussion on the paper that much will have to be considered in progressing from the position so far attained. With a little more development it should prove possible perhaps to make a practical trial in non-safety circuits, where no harm could result if a defect developed. Mr. R. Dell, Signal Engineer, London Transport Executive, looks forward to an opportunity of doing this. The equipment exhibited, although representing only a simple layout, appears to be built along lines offering considerable possibilities for the future. A good many problems remain to be solved but the first step taken has been in a hopeful direction.

The Railway Students' Association

THE Railway Students' Association is celebrating its fiftieth anniversary this weekend under the Presidency of Mr. A. B. B. Valentine, Member of the British Transport Commission. In April, 1909, a small group of railwaymen who were at that time attending lectures on railway subjects at the London School of Economics, feeling the need for further discussion outside both lecture room and railway office, conceived the idea of such an association. From such small beginnings it has steadily grown and now has a membership of over 1,200. Its development is traced in detail in the paper read last week to the association by Mr. S. B. Taylor, Chief Secretary of the British Transport Commission, on which we comment on page 385.

For some years it had been the practice of most of the English railway companies to send to the London School of Economics and Political Science, in the University of London, some of the younger men of their clerical establishments, so that full advantage could be taken of the evening study courses in railway subjects which the School had started. The idea of a Railway Students' Association was warmly supported both by Mr. (later Sir William) Acworth, who had been mainly responsible for starting the courses, and the Hon. W. Pember Reeve, then Director of the School. The latter undertook to ensure for the Association every facility for the holding of its meetings at the School, a pledge duly honoured to this day, and himself became its first President.

The circumstances in which railway staff were able to

attend evening lectures or classes 50 years ago were very different from what they are today. Hours of work were longer and salaries lower, and the enthusiasm and industry shown by those founder members should not be lightly forgotten. It has been mainly because of similar qualities shown by generations of members and their officers, who in their spare time have faithfully and without reward served its original purposes that the Association has flourished and survived to the present day.

Among the achievements of the Association has been the holding of regular monthly meetings from October to March, at which authoritative papers have been read and discussed, almost without a break, throughout its history. The published transactions of the Association constitute a permanent witness to the sustained support both from within and outside the railway industry that the Association has enjoyed throughout its history. While many of these papers are "dated" in the sense that they dealt with matters which were important only at the time at which they were read, others have permanent significance. Among the latter may be mentioned Lord (then Sir Cyril) Hurcomb's Presidential address for the session 1948-9 entitled "The Organisation of British Transport." We know of no more authoritative or better informed account of the purposes and content of the Transport Act of 1947 than is contained in that address, the subject of an editorial article in our October 22, 1948, issue. Another paper of a very different kind, with a message that is not likely to become out-dated for many a day, was Mr. (now Sir) John Elliot's Presidential address for the year 1950-51 entitled "The Functions of Management in an Age of Change," referred to editorially in our October 20 and 27, 1950, issues. Possession of these transactions constitutes one of the major benefits of membership of the Association. Besides the formal reading of papers, a more recent development has been the holding of debates on topical and controversial aspects of railway management, which, if judged by the number and status of those present, are both popular and duly noted at management level.

Another important part of the Association's activities has been the organisation of annual conventions giving members the opportunity of inspecting railway facilities and studying railway problems both at home and abroad. The chief industrial cities and towns have been visited throughout Britain. Railway and other transport undertakings, port authorities, and municipal and educational bodies have co-operated to welcome the Association, and provided the means of imparting local knowledge concerning industry and agriculture, shipping, and also local geology and geography in so far as they have a bearing upon transport. Visits to centres such as Paris, Brussels, Amsterdam, and Zurich, where the Association has invariably met with the warmest welcome and every sort of assistance and help have further extended opportunities to members of broadening their outlook. It was a happy thought to invite representatives of those Continental railway undertakings whose hospitality the Association has enjoyed in this way to partake fully in this weekend's Jubilee celebrations in London.

As to the future, some people might argue that having regard to the establishment and growth of so many other organisations with not dissimilar objects, and the availability of courses on railway subjects at a number of centres other than the London School of Economics, there is no longer room for an Association whose origin was based upon the common experience of attending lectures at the School. It is also noted that membership is confined to those engaged in rail transport only; and that this fact is out of keeping with modern times. The contrary view is that at no time in the history of the railways has there been a greater need for forward thinking, education at every level, and the modernisation of railwaymen's minds as well as their equipment. To jettison this body of enthusiasts, built up over the years by the disinterested devotion of its officers with the generous support of railway management, would be nothing less than a tragedy. If the encouraging attitude of the British Transport Commission towards all forms of self-improvement and educa-

tion is any guide, the Association can look forward to continued support from that body and from senior officers of British Railways and London Transport, for many years to come.

Fifty Years of the R.S.A.

THE origins and growth of the Railway Students Association, whose purpose and activities are discussed in the preceding article, are vividly described by Mr. S. B. Taylor, Chief Secretary of the British Transport Commission, in his paper "The Railway Students Association: The First Fifty Years," read to the Association last week. Space allows only brief mention here of a few of the developments in the history of the Association, and of the many outstanding figures in the world of railways who have assisted it, referred to in the paper.

As to the beginnings, the immediate success of the lectures on railway economics given by William Acworth at the London School of Economics in 1895 was due mainly to the desire of adult railwaymen who had been recruited at the age of 14 or 15, for instruction, not obtainable at night schools, in subjects which would help them in their work. "Railway economics" moreover indicated a relation of the then relatively new science of economics to railway work. A year later 46 of the staff of the G.W.R. were attending. Shortly afterwards the G.W.R. Directors considered it to be "to the Company's interest that their servants should be encouraged to attend these lectures" and agreed that the company should pay half the 10s. fee. In 1898 the Railway Department of the L.S.E. was formed, with Acworth at its head. The L.S.E. obtained recognition in 1900 as a School of the University. While the School catered for matriculated students studying for the B.Sc. (Econ.), the Railway Department lectures had always been available to all judged to be able to benefit. About 300 railwaymen were attending in 1904. In February, 1909, at a meeting of the Students of the Railway Department of the L.S.E., it was agreed that an association be formed, called "The Association of Railway Students of the London School." The object was "to discuss questions of general railway interest." A proposal to admit all railwaymen to membership of the Association, whether students of the School or not, was defeated. The first annual general meeting was held in April, 1909. The Hon. W. Pember Reeves, the Director of the School, was elected President. During the first year, papers were read on the application of concrete to railway construction, on goods station organisation, and on the possibility of profit-sharing on the railways. A speaker in the discussion on the last-named paper was F. J. C. Pole, later Sir Felix Pole, General Manager of the G.W.R. This variety of subjects has been maintained ever since, with marked success. The President in 1910 was Sir George Gibb, General Manager of the North Eastern Railway, the first of a series of senior officers of British railways who have presided over the R.S.A. After the outbreak of war in 1914, R.S.A. activities continued until adjournment sine die in 1916, so ending a distinct period in the life of the Association. It was, as Mr. Taylor points out, a golden age for students, for never again did they have so few distractions to encroach on their spare time.

Vigorous life began again with the session of 1921-22, with Sir William Beveridge, now Lord Beveridge, Director of the School, as President of the Association. Speakers included J. H. Thomas, Secretary of the N.U.R., on "co-operation in railway management," in which he put knowledge of human nature before technical qualifications as a requisite for management and emphasised that the best results could be secured only by teamwork. Soon after began the series of visits to places of transport interest, starting with Feltham marshalling yard, on the L.S.W.R. A feature of these has been the generosity with which not only the former railway companies, and their successors, London Transport Executive and the Regional managements of British Railways, but also manufacturers of railway material of all kinds and large-scale users of the railways have afforded facilities for viewing works and installations.

The presence of a particularly numerous and distinguished audience at the reading by Sir Felix Pole of his Presidential address in 1925 was a filip to attendance at meetings. Next year saw the first Continental visit, to Germany, where Dr. Dormmüller, Director-General of the State Railway, entertained the party. Through the good offices of Sir Felix Pole, the papers read during the session 1925-26 were printed and distributed to members free of charge, which started off the long series of printed *Proceedings*. The interest in the R.S.A. shown by the acceptance of its Presidency during the 1920s by the heads of the four-main-line companies, Sir Felix Pole, Sir Ralph Wedgwood, of the L.N.E.R., Sir Josiah (later Lord) Stamp, of the L.M.S.R., and Sir Herbert Walker, of the Southern Railway, did much to invigorate it. The Leeds convention in 1930 was the first of annual conventions in British provincial cities. Among other notable Presidents of the years between the wars was Frank Pick, Managing Director, London Electric Railways, who spoke on education for the railway service. Mention must be made of the paper by H. N. Gresley, later Sir Nigel Gresley, on high-pressure locomotives, with special reference to L.N.E.R. No. 10,000. In September, 1939, on the outbreak of war, all R.S.A. activities were suspended.

Soon after cessation of hostilities the four main-line railway companies and London Transport were approached for their usual co-operation, but their reply was cautious, doubtless because of the cost of their own enlarged educational arrangements and of doubt as to the position of the Association in relation to the Institute of Transport. It was learned that the Railways were not continuing their pre-war annual block grants to the London School of Economics but were willing to pay the fees of such railway students as were admitted by the School. A further stipulation was that railway students attending the School must be prepared to sit for the examinations of the Institute of Transport. A more definite drive to start discussion groups was made and soon two were functioning, at Liverpool Street and at Paddington. Later, one started at the L.S.E. The creation of the British Transport Commission and of the Railway Executive under the Transport Act, 1947, resulted, through the staff education policy pursued, in benefits to the R.S.A. For the session 1948-49 Sir Cyril Hurcomb, now Lord Hurcomb, Chairman of the Commission, was, appropriately, elected President of the Association. His successors included, in 1950-51, Sir John Elliot, who was then Chief Regional Officer of the London Midland Region and became Chairman of the Railway Executive during his Presidential year. He was followed by other C.R.O.s., the late Mr. C. K. Bird of the Eastern, and Mr. C. P. Hopkins of the Southern Region.

Mr. David Blee, President in 1953-54, designed the programme for his session to demonstrate the link between purely academic studies and practical transport work. Sir Reginald Wilson, Member of the B.T.C., was elected President for 1954-55. His successor, Mr. J. C. L. (now Sir Landale) Train, also a Member of the Commission, sponsored a remarkably informative programme, including papers on electrification by Mr. S. B. Warder, on diesel traction by Mr. R. C. Bond, and on railway salesmanship by Mr. E. W. Arkle.

About that time the L.S.E. announced that the Government was pressing all the Universities to accept more undergraduates. The School felt that it could no longer continue large classes on railway and transport subjects for the benefit of students not proceeding to a degree. Mr. Taylor observes that early in the history of the R.S.A. mass entry by railwaymen to a School of the University of London without matriculation was by a wide side door, intentionally so constructed in the first place and gladly left open afterwards. This door was now closed. An alternative lies in the University of London Extra-Mural Department, which provides lectures and courses in many subjects, including transport. One of these extra-mural courses is held at the School itself, at which railwaymen attend as before.

The Victorian Railways in 1957-58

MR. E. H. BROWNBILL, Chairman of the Victorian Railways Commissioners, has sent us a copy of the Victorian Railways report for the year ended June 30, 1958. It shows that total revenue for the year from all sources amounted to £36,066,303 and working expenses to £38,351,510. Interest charges and expenses, exchange on interest payments and redemption, and contribution to the national debt sinking fund amounted to £3,596,499, so that the result of operating the railways, electric tramway, and road motor services was a deficit of £5,881,706.

Some of the principal results of working the railways in 1956-57 and 1957-58 are given below:—

	1956-57	1957-58
Average route-mileage open	4,425	4,402
Train-miles	18,544,051	18,353,472
Passenger journeys	167,404,861	167,661,724
Goods and livestock, tons	9,380,699	8,891,859
£A		
Passenger, parcels, etc., revenue	12,775,248	12,481,613
Goods and livestock revenue	22,110,500	20,849,159
Total earnings	37,362,754	35,966,360
Working expenses	39,118,678	38,174,019
Deficit	1,755,924	2,207,659

The total revenue was £1,431,500 less than in 1956-57 due mainly to the reduced volume of wheat carried and loss of revenue from other general goods traffic which was attributable largely to the adoption of reduced rates to meet road competition. There was also a reduction of £258,500 in the revenue from passenger traffic. On the other hand, as a result of the long dry season, revenue from livestock traffic increased by £252,000.

Although main-line passenger journeys declined by only 119,805 by comparison with the previous year, since 1937-38, they have fallen from 5,850,581 to 5,029,988. This has occurred despite the introduction of air-conditioned coaches on main-line and interstate trains and of improved timetables, and is undoubtedly due to the increase in private motorcars. Suburban passenger journeys totalled 162,631,736, some 376,668 more than in 1956-57. This traffic is also adversely affected by the use of private motorcars, but the main difficulty is the lack of patronage during off-peak periods.

The conversion to diesel traction of 47 per cent of the goods mileage, acceleration of the services, and the replacement of some thousands of obsolete goods wagons, have, as well as producing large savings in working expenses, substantially increased the capacity of the system. This increased capacity is not being availed of because of the large volume of goods being carried by road. Throughout the year active steps continued to be taken with an augmented staff of commercial agents to meet competition for goods traffic, especially in the vulnerable higher rated categories, by maintaining close contact with consignors and consignees and by offering reduced rates when it was obvious that this was the only means of retaining or regaining traffic. These efforts were responsible for additional interstate traffic being carried, the tonnage of all goods moving by rail between Victoria and the other States increasing by 6½ per cent.

Within the limits of available funds, the rehabilitation and modernisation of railway facilities was continued. Further work, mainly at stations, was carried out to complete the duplication and electrification of the main Gippsland line. Extensions were brought into use at Dynon goods terminal, where a substantial volume of goods traffic is now handled, thus minimising congestion in the Melbourne yard and goods depot.

In the suburban area, satisfactory progress was made with the construction of the first stage of the new Richmond Station, which is necessary to provide for the additional tracks planned to serve the Caulfield and Box Hill groups of lines. A new station was opened at Laburnum, between Box Hill and Blackburn, and work was carried out at the sites of three other stations. Duplication of the East Malvern line and of several sections of other suburban lines were completed during the year.

In presenting his 1957-58 budget, the Federal Treasurer announced that the Commonwealth had accepted in principle the recommendation of the Wentworth Committee that a standard-gauge line be constructed from Albury to

Melbourne, and that the Commonwealth would supply funds towards the work. Subsequently the Commonwealth intimated that it was prepared to meet 70 per cent of the cost of the work, now estimated at £10,750,000, subject to the balance being shared by Victoria and New South Wales. The whole of the funds required will be advanced by the Commonwealth in the first instance, the States' proportions, plus interest, being repayable over 50 years. The New South Wales and Victorian Governments have agreed to share equally the remaining 30 per cent of the total cost.

Letters to the Editor

(The Editor is not responsible for opinions of correspondents)

British Railways Diesel Services

March 20

SIR,—Your correspondent states on page 326 of your March 20 issue that the diesel multiple-unit trains have failed to increase traffic in 1958. The volume of passenger traffic in that year, despite a recession and unemployment, closely approached that of 1957, which was swollen by traffic occasioned by the petrol rationing imposed after the Suez incident. That surely is ample evidence that diesel services have brought about large increases in traffic.

Statistics published on the individual area schemes for introduction of diesel services have in every case shown an increase, sometimes quite exceptional, in passengers. While replacement of the former steam services may not have completely wiped out a deficit, the loss has been substantially reduced while certain services have been enabled to show a profit. For example the Newcastle-Middlesbrough services, which showed a movement cost loss of £10,000 in 1955 showed a movement cost profit of £137,000 in 1958. On the Leeds-Harrogate-Bradford services, receipts of £23,000 in the last year of steam operation have grown to £116,000, while the first full year of diesel inter-city trains on the Edinburgh-Glasgow route brought in 700,000 additional passengers.

Diesel multiple-unit services, far from being "an expensive experiment," are not experimental at all, but settled, and public, policy. Far from being expensive, they are helping greatly to reduce what would otherwise be an even larger deficit, besides creating traffic and engendering of goodwill among the public.

Yours faithfully,

G. H. HAFTER

49, Church Street, Isleworth, Middlesex.

The Success of Diesel Traction in the U.S.A.

March 21

SIR,—The article in your February 27 issue mentioned the advantage of the American system of operating with separate diesel units. These vary from 1,500 to 2,000 h.p. and to suit traffic movement two, three, or four units are coupled together to form one locomotive. With its habitual thoroughness the Bureau of Railway Economics, Association of American Railroads, furnishes in May each year statistics of diesel unit miles as well as diesel locomotive miles. In 1957 the average diesel locomotive consisted of 2.58 units, so that it had a horsepower of at least 3,750. It moved the average train load of 1,439 tons at 18.8 m.p.h. between terminals.

This record performance surely upsets the claim that the Deltic locomotive, now being tried on our railways, is the most powerful in the world.

Yours faithfully,

YOUR CORRESPONDENT

Westminster, S.W.1

[No claim has ever been made that the 3,300-h.p. locomotive built by the English Electric Co. Ltd., with two Napier Deltic engines, is the most powerful locomotive combination in the world, only that it is the most powerful locomotive unit—Ed, R.G.]

THE SCRAP HEAP

Cup of Rosie Lee?

With the agreement of the French National Railways, the owners of a flower stall on No. 1 platform at Cannes are now also serving refreshments to passengers. This innovation of a joint flower-refreshment stall is proving very popular.

Off the Rails

The other evening at Barking Station I saw about 100 people on Platform 5 waiting for a train to the City. A porter drew their attention to a large notice prominently displayed, stating that all trains would leave from Platform 3. Not one of those waiting had noticed that the rails had been taken up at Platform 5.—*Letter to "The Star."*

Idiotic Inquiries

During the next six years three or four hundred uneconomic Midland railway stations will be closed. According to a British Railways spokesman, none of them will be closed "just like that." There will be the usual snowstorms of documentation, culminating in a public inquiry for each station. If stations are to be closed, the proper way to close them is surely "just like that." What is the point of all these idiotic inquiries? If the account books show that there is no demand for these stations, or insufficient demand, what more is there to be said? What is the point of allowing people to mander on, trying to

prove the existence of the non-existent?

At an inquiry into the proposed closure of Amptill Station, for instance, it was suggested that prospective passengers were deterred by the fear of being struck on the head by falling plaster. Could futility go further?—*Peter Simple in "The Daily Telegraph."*

Without Asking for More

While travelling recently on the Southern Region of British Railways the passenger opposite me ordered tea from the dining-car attendant. It arrived on an immaculate tray but was quickly reduced to a dismal lake of milk and tea by the rock 'n' roll of the hurrying train.

When the tray was collected and paid for the lady remarked good-naturedly that she had been able to drink only one mouthful. This seemed to close the incident, but a quarter of an hour later the attendant appeared with a fresh tray and said the going was now smoother and "you'll be able to enjoy it."—*From a letter to "The Times."*

Without Reservation

Italian senators and deputies who have been accustomed to enjoying the privilege, on their journeys by train from Rome to their constituencies, of travelling in compartments and seats specially reserved, may now have to stand if their trains are full. This threat to their comfort is the outcome of a successful appeal made to the

court of Rapallo by Signor Luciano Ruggiero, of Rapallo.

Last December, finding standing room only on his train from Rapallo to Genoa, he took a seat in a compartment reserved for the politicians. He was taken to court. His acquittal was based on the fact that no law has ever been passed to reserve compartments for the M.P.'s. Among the privileges granted to Italian M.P.'s is that of free railway travel, while free trips are also granted for their families, servants, secretaries and two friends who help them during electoral campaigns.—*From the "Evening News."*

U.S.A. Pullman Safety Record

Statistics published by the Association of American Railroads show that in 1958 more than 6,000,000 Pullman passengers on U.S.A. railways travelled about 4,250,000,000 miles—without a single fatality. For perpetuating its high level of safety since November, 1951, the Pullman Company twice in the last two years has been awarded a special certificate of commendation by the American Museum of Safety.

Mud-Bath

Donald Sampson, aged 42, of Bebington, Cheshire, fell 80 ft. from the railway bridge over the Mersey at Widnes, landed feet first in soft mud, and was buried up to his chest. He was rescued by Widnes fire brigade and taken to Whiston Hospital. It is thought that Sampson fell out of a train as it crossed the bridge, climbed the stone parapet to avoid another approaching train, and slipped.—*From "The Manchester Guardian."*

Right Dress!

Some British railwaymen profess
A yearning for a change of dress,
Some readjustment to the norm
That regulates their uniform.
It seems they won't be really happy
Until they're clad in something snappy.
It's up to someone to produce
A natty line in pink or puce.

We well recall how, long ago,
Green corduroys were *comme il faut*,
And, where the torso joined the head,
Were ties or neckerchiefs of red.
But these have disappeared from view
And ties of less malignant hue
Contrive, with certain reservations,
To share the station decorations.

Though manners claim their rightful
share,
Dress helps men to be debonair
I'd like to see some *petit point*
Adorning chaps around the joint
And cheer like anything at those
Who come to work in trunk and hose.
May the idea travel far
And down with any colour bar!

A. B.

Railway Murals in Banbury Station



Murals over refreshment bar in new station at Banbury, Western Region
(see article on pages 392 and 393)

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Electric Locomotive Deliveries

The first two 2,200-h.p. 3,000-V. d.c. electric locomotives of an order for 135 placed by the South African Railways with Metropolitan-Vickers South Africa (Pty.) Limited on behalf of Metropolitan-Vickers Electrical Export Co. Ltd., have been shipped from the Stockton Works of Metropolitan-Vickers-Beyer, Peacock Limited.

The locomotives have a Bo-Bo wheel arrangement and weigh 84 tons. They are classified as Type "SE1" and have a continuous tractive effort at the wheels of 26,000 lb. at 26.6 m.p.h. and a 1 hr. tractive effort of 32,000 lb. at 25 m.p.h.

NIGERIA

Expenditure for Railway Extension

The Nigerian Railway Corporation has announced details of how the £10,000,000 loan received from the World Bank for the railway extension to Maiduguri is to be spent. Locomotives and railcar sets will take about £2,500,000 of the loan; wagons £4,500,000; passenger carriages £1,500,000; workshops, plant, and machinery £500,000; rails, sleepers and turnouts £1,000,000.

The total cost of the 400-mile railway extension to Maiduguri is estimated at £20,000,000. Loans from the Nigerian Government and the Railway Corporation itself are meeting the difference between the World Bank loan and the total cost. Construction began last August, and should be completed in 1963.

INDIA

Planting Trees Alongside Track

All railway managements have been asked to intensify efforts to plant more trees along railway lines and in railway colonies on available land which cannot be readily utilised in connection with the "Grow More Food" campaign. Preference is to be given to the quick-growing fuel and shady trees, so that they increase fuel production.

Coach Factory Production

The integral coach factory at Perambur, near Madras, which so far has only been producing third class coaches, has begun production of third class-cum-luggage vans. The factory will also produce postal vans and first class coaches.

The first third class-cum-luggage van has already been produced. The design of first class coaches is in hand,

and it is expected that the factory will also start construction of this type during the current Plan period. It is proposed that the integral coach factory should also undertake the construction of prototype all-welded bogie wagons. The factory has so far turned out over 700 coaches, and the present production averages more than one coach every six working hours.

VICTORIA

Livestock Service

The special livestock service from Balranald to Newmarket, every fourth Tuesday, will be continued until June 30, when the position will be reviewed in the light of the traffic offering. The service was introduced to cater specially for cattle and fat sheep. The train leaves Balranald at 9 a.m. and arrives in Melbourne early the next morning in time for the Newmarket sales. The regular livestock train from Balranald on other weeks runs on Mondays. In addition, stock is conveyed by rail from Moulamein to Newmarket every Wednesday.

Standard Gauge Line

Steady progress is being made with earthworks and bridge and culvert construction jobs for the Melbourne-Wodonga £11,000,000 standard gauge project. Earthworks for the Mangalore-Wodonga section of the standard gauge track have been started. For this section of the standard gauge line they will comprise 900,000 cu. yd. of earth to be taken from rail cuttings, strips of acquired land, and excavations for dams on private properties adjoining the route.

Sub-structures of 42 bridges and 102 culverts, mainly between Mangalore and Wodonga, have been completed and work is in progress on a further 61 culverts and 76 bridges. The steel coffer dam required for the construction of the concrete pier in the river bed for the bridge over the Broken River at Benalla is completed and pile driving is finished. All the concrete piles for the bridge spanning the Ovens River at Wangaratta have been driven and work has begun on two coffer dams needed for the erection of the two main piers in the river bed.

NEW ZEALAND

Holidays

An extra day's holiday for all Railway Department employees has been approved by the Government Railways Industrial Tribunal. At the same time it reserved decision on an application for an additional two days' leave a year. Both the department and employees' representatives had previously agreed on the suggestion that one day's "recreational leave" be granted to all employees annually, but the Department

Japanese Rolling Stock Construction

(See our December 19, 1958, issue)



Motor generator being installed in driving trailer of Japanese National Railways multiple-unit electric train "Kodama"

was opposed to a request from the Railways Officers' Institute that two days, the day after Boxing Day and the day after New Years Day, be given as holidays to employees in both the salaried and general divisions.

CANADA

Wages Agreement Signed

Mr. J. Graham, General Chairman of the Brotherhood of Locomotive Firemen & Enginemen representing firemen employed on the Canadian Pacific Railway and Quebec Central Railway, and Mr. A. L. McGregor, Manager, Labour Relations, Canadian Pacific Railway Company, have announced the signing recently of an agreement on the Canadian Pacific Railway running to May 31, 1961. The new agreement provides for wage increases over the period of the agreement and mutual agreement on certain rule changes sought by both parties. In announcing the settlement both parties expressed satisfaction with its terms and with the period of stability that it will establish on the C.P.R.

Deferred Payment Plan

A deferred payment plan for permanent Canadian residents over 21 was introduced on April 1 by Canadian National Railways, the only railway in Canada to provide travel accommodation on the instalment plan. The plan includes unrestricted travel in Canada, one-way or return trips originating in Canada to any point on the North American continent, and combined rail and ocean voyages.

For a 10 per cent down payment and a minimum order of \$100 residents can purchase complete transportation, sleeping accommodations, hotel reservations, and even travellers' cheques to

cover meals and incidentals. The balance can be paid up to two years from time of purchase, depending on the amount involved.

The plan requires the filling of an application form at any C.N.R. ticket office or travel agency explaining the details of the proposed trip and the cost. Responsibility for payment may be assumed by someone other than the traveller.

FRANCE

Marshalling at Clermont-Ferrand

Until recently, most freight traffic at Clermont-Ferrand was handled at the two restricted marshalling yards of Gare Basse and Les Gravanches. At the former some 470 wagons were handled daily, and at the latter approximately 700. It was decided to abandon the yard at Gare Basse and improve the other yard to enable it to handle all the traffic. Amongst the works carried out were an increase from four to five in the number of reception sidings and from 27 to 29 in the number of sorting sidings, the raising of the humps, and the construction of a connection between the withdrawal roads and the main line which was equipped for two-way working by the installation of colour-block signalling with track circuits. Diesel locomotives are now used for shunting. Considerable economy in staff has resulted.

Pull-and-Push Trains

Since early this year, certain services between Valence and Lyons, previously worked by diesel railcar, have been operated by pull-and-push electric trains, the electric locomotive being worked, in one direction, by remote control from the other end of the train.

Such trains are also working between Valence and Portes, and between Valence and Saint Rambert.

CZECHOSLOVAKIA

Freight Traffic

Under schemes now being elaborated, it is intended that half of all freight on the State Railways will be hauled by electric traction by 1962, and after 1970 the total will amount to 70 per cent. The remainder will be dealt with by diesel traction.

SWITZERLAND

Multi-voltage Shunting Locomotives

The Federal Railways are ordering 10 electric shunting locomotives for work in stations and yards near the frontiers, where the S.F.R. electrified lines link up with those of foreign railways electrified at other voltages. The S.F.R. are electrified at 15,000 V. 16½ cycles, as are the German and Austrian Federal Railways lines. The French National Railways, Eastern Region, line running into Basle is electrified at 25 kV. 50 cycles, whilst their South Eastern Region line into Geneva is converted at 1,500 V. d.c. The Italian State Railway lines which connect with the S.F.R. are electrified at 3,000 V. d.c. The 10 shunting locomotives will work on all these systems, with virtually automatic switching from one to another.

U.S.S.R.

Train Ferry Over Caspian

A diesel-electric ferryboat is being designed to convey 18 bogie passenger or 30 goods vehicles between Baku, in Transcaucasia, and Krasnovodsk, in Turkmenia. The 220-mile passage over the Caspian is expected to take 12 hr.

Publications Received

IX Congreso Panamericano de Ferrocarriles (Ninth Pan American Railway Congress) Vol. I: Reports of Proceedings.—Published by the Pan American Railway Congress Association, Calle Peru, 277, Buenos Aires. 9½ in. x 6½ in. 350 pp. No price stated.—This record of the session of the Congress held in Buenos Aires in August-September, 1957, gives particulars of the much-increased activities of the Congress besides details of the proceedings and lists of participants. Observers from outside America were present and Great Britain was represented by an official delegation. The subjects discussed fell into five main classes, but the actual papers are not reproduced in this publication. The Tenth Session is to be held in Brazil.

Festiniog Railway Guide Book. Published by the Festiniog Railway Company, Harbour Station, Portmadoc, Caernarvonshire. Illustrated. 24 pp. Price 1s. 6d.—A mile-by-mile description of the route is given, with sectional

diagrammatic maps, on the principle of the G.W.R. "Through the Window" and L.N.E.R. "On Either Side" booklets. The information is succinctly presented. The photographic illustrations are well chosen and the maps are clear.

Diesel Fuel Injection Servicing Equipment.—A 14-page catalogue issued by Merlin Engineering Co. Ltd., briefly describes the Merlin range of servicing plant for fuel-injection equipment. The main items in the catalogue are Calmaster fuel-pump calibration and phasing machines of which four sizes are illustrated. These range from a small bench-mounted model with three fixed speeds for automotive diesel repairers, to the largest machine with 5-h.p. driving motor and infinitely-variable-speed hydraulic transmission. Merlin Patent Electroscopic Phasing also is described. This makes use of an electronic strobe gun and is available at extra cost. There is an attachment for testing the functioning of hydraulic governors, and a cam box and calibrating stand for single-cylinder base-flange mounting fuel

pumps. Other servicing equipment described and illustrated includes a universal vice capable of swivelling and inverting fuel pumps on the bench, and Servicemaster injector-reconditioning machines. The catalogue may be obtained from the Merlin Engineering Co. Ltd., Hebble Mills, Halifax, Yorkshire.

Code of Practice for Maintenance of Insulating Oil.—A British Standard publication, C.P. 1009 (1959): maintenance of insulating oil, is one of a new electrical series and deals with oil supplied to British Standard 148 intended for use in transformers, switchgear, and other oil-immersed electrical equipment. It does not apply to oil in capacitors. The code recommends routine methods of sampling and testing for deterioration, oil in storage, in the course of handling, or in service. Periodic treatment to maintain the properties of oil is recommended. Due regard has been given to the difficulties of testing on site. Copies, price 6s., may be obtained from the British Standards Institution, 2, Park Street, London, W.1.

Track-Side Foundations in Subsidence Areas

Construction of concrete rafts to carry steel structures for overhead electrification

THE main line between Manchester and Crewe, British Railways, London Midland Region, passes through a section subject to serious subsidence caused by brine extraction. The section concerned is between Sydney Bridge and Sandbach, a few miles north of Crewe. Between 1892 and 1956 the subsidence amounted to 16 ft., the yearly average varying between 2 in. and 9 in. The present average is 8 in. and it is anticipated that the subsidence will continue indefinitely.

Over the years it has been necessary for the tracks passing through this section to be continually lifted and repacked with quantities of tipped ashes to maintain a level across the increasing depression caused by the brine extraction. An indication of the constant change occurring is at the middle of the section, where major subsidence occurs and where originally the line crossed a then shallow depression on the seven-arch Elton Viaduct. By the middle 1930's the rate of lifting necessary to compensate for the subsidence necessitated the abandonment of the viaduct and all but one of the arches were submerged under tipped embankments, the arches being first collapsed. The remaining arch was retained to maintain an existing roadway access from one side of the track to the other.

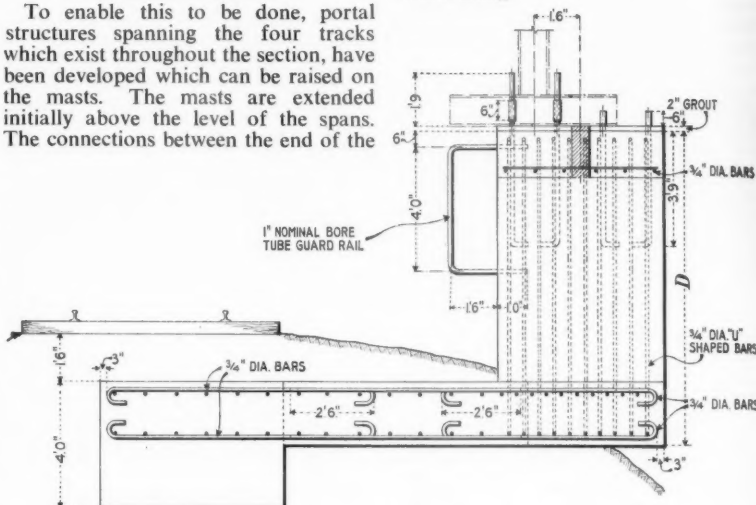
Because of the constant track lifting anticipated in the future it has been necessary to cater for this when designing the overhead line equipment to maintain the contact wire within the maximum and minimum heights above rail level. Under normal conditions in sections not subject to subsidence, little or no track lifting is necessary and the overhead line equipment can be supported on structures of fixed height and with permanent bases. In the subsidence section, to maintain the

contact wire and associated equipment within the prescribed limits, the structures and foundations have been designed so as to enable the whole equipment to be raised as and when the lifting of the tracks beneath dictate.

Adjustable Structures

To enable this to be done, portal structures spanning the four tracks which exist throughout the section, have been developed which can be raised on the masts. The masts are extended initially above the level of the spans. The connections between the end of the

of track lifting before major adjustment to overhead equipment is necessary. When this limit is reached further track lifting will be carried out by raising the portal structure on the sliding mast connections a further 4 ft., so allowing for a period of four to six years of track lifting.



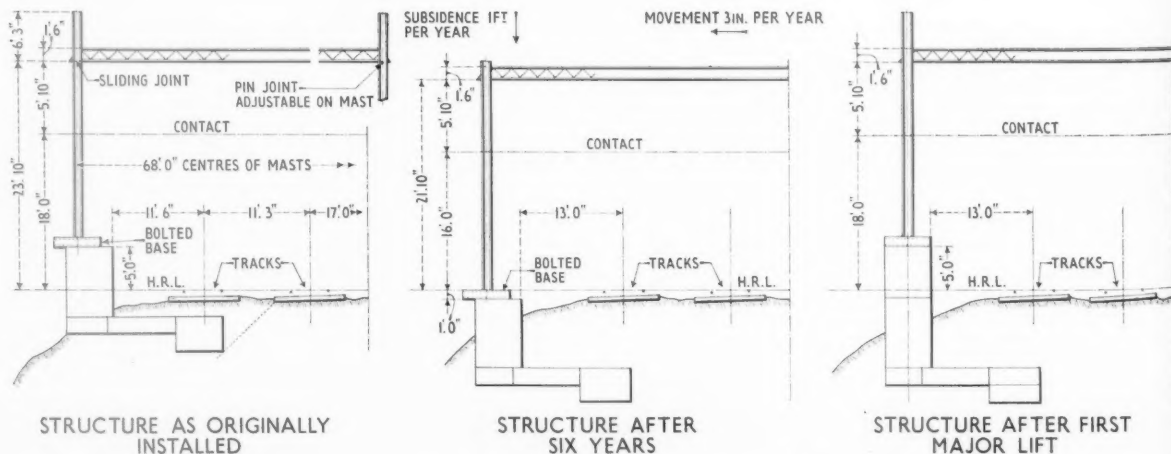
Section through reinforced concrete foundation for track side structure; the height "D" is either 5 ft. 6 in. or 9 ft. 6 in. according to requirements of site

spans and the masts are through hinged and sliding joints to allow for individual movement of the masts due to subsidence, and adjustment of the structures as required.

To give an initial period of track lifting without necessitating the raising of structure spans, the overhead contact wire has been installed at 18 ft. above rail level instead of the normal 16 ft. This allows for some two to three years

To cater for lifting beyond this stage, it will be necessary to lift the complete supporting structures bodily. For this purpose special foundations have been developed with bolted connections for the mast bases. By using ferrules on the bolts their length can be increased and the foundations made up between the original foundation levels and the raised structure masts.

Because of the ash content of the



Arrangement of overhead structure on concrete foundation, showing effect of subsidence and position after first major lift



Excavation for raft, showing reinforcing bars ready to receive concrete

tipped embankment it has been necessary to design the foundations on a gravity basis rather than for the normal side bearing conditions. This has led to the development of large raft-type foundations in the vicinity of Elton Viaduct, where the major subsidence occurs and these have been so designed as to locate the bulk of the foundation weight beneath the running tracks with extensions outwards to the cess for seating the bases of the structure masts. Dependent upon the amount of subsidence expected the mast seatings have been installed at varying heights up to 5 ft. above rail level to allow for the additional tipping on the embankment clear of the actual structure steelwork.

Design of Foundation

The bulk of the foundation is situated 1 ft. 6 in. below the underside of the sleepers and the adjacent cess and consists of a reinforced concrete raft 8 ft. wide by 15 ft. along track and 2 ft. thick. An extension of this raft directly beneath the track 6 ft. square and thickened up to 4 ft. acts as a counter weight to the outer extension of the raft which carries two vertical reinforced pillars 5 ft. 6 in. wide by 10½ in. thick and 9 ft. 6 in. high. The top portions are united across the overall width of the pillar along track to form a seating block 1 ft. 9 in. thick for the structure mast base. Two sets of holding down bolts are cast in to allow for across track adjustment of the mast. A foundation of this type involves some 18½ cu. yd. of concrete and 700 ft. of ½ in. dia. reinforcing bars.

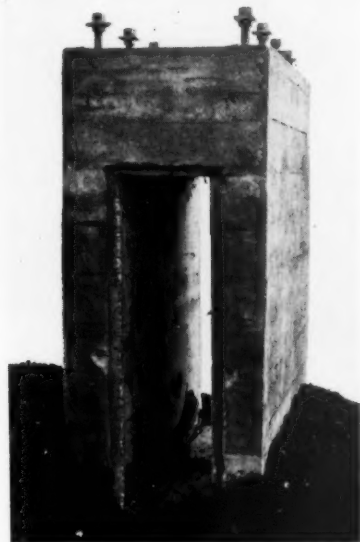
To install the foundations a section of track was removed and the excavation for the raft and undertrack block carried out. Because of the ash condition timber shuttering was used to maintain the sides of the excavation. After installation of the preformed reinforcing bars and casting the raft, the

ash and ballast was backfilled and the track reinstated. Separate structure shuttering was erected on the extension of the raft outside the track and the pillars and seating base cast. The reinforcement construction was maintained with the previously cast raft. The timber shuttering used was prefabricated in easily assembled units so that it could be re-used at other locations where similar foundations were installed. Rail mounted mechanical plant was used throughout to produce and pour the concrete.

At either end of the subsidence section, where little or no subsidence has been evident for some time, normal structures and foundation with bolted connections have been installed to allow for adjustment if required.

Throughout the section, some three miles long, the portal structures have

been spaced at a maximum of 150 ft. as compared with the normal 240 ft. for tangent track. This has been done to reduce the length and weight of overhead equipment supported by each structure and confine adjustments over short spans of equipment. Also to ease maintenance problems the tension lengths of overhead equipment have been reduced in comparison with normal arrangements. At each of five



Mast seating, showing hollow section and fastening bolts

overlap positions, the equipment is terminated at an independent balance weight anchor mast of subsidence type installed on a special subsidence type anchor foundation.

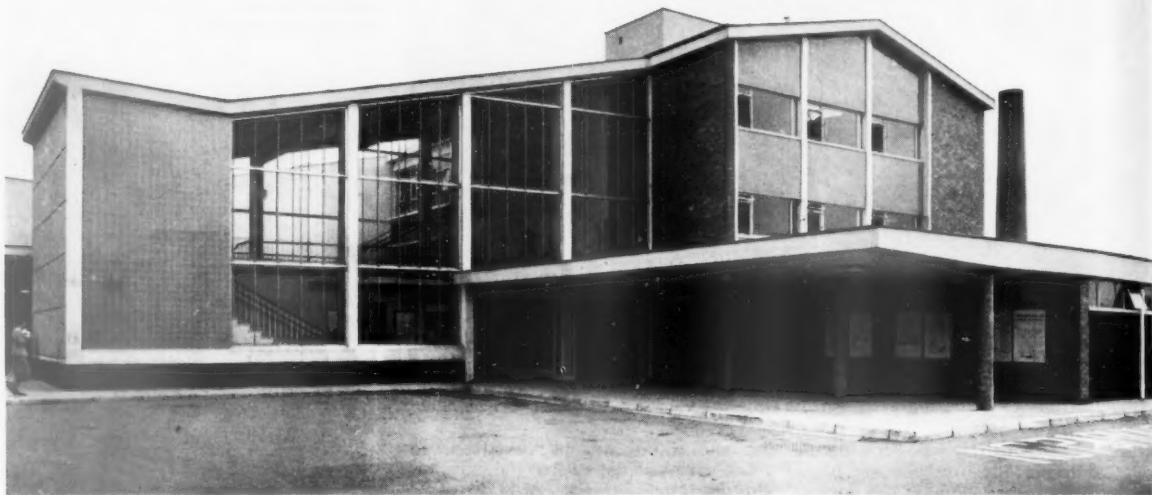
The work was carried out by British Insulated Callender's Construction Co. Ltd., under the general direction of Mr. J. Taylor Thompson, then Chief Civil Engineer, London Midland Region.



Concrete being poured into shuttering from rail-mounted mechanical plant

New Station at Banbury

Improved track layout and contemporary architecture combine to produce efficiency and aesthetic appeal



Exterior of the new station building

WORK on the reconstruction of Banbury Station, the first major station re-building scheme undertaken by the Western Region of British Railways as part of its modernisation plan, now is complete.

The principal features of the new station are the main building at ground level, which houses a modern booking-office, and a spacious concourse giving access to the left-luggage counter, book-stall, public telephones, and telegraph service. To the rear of these are

offices, staff rooms, extensive parcels facilities and an automatic telephone exchange.

Leading from the main building to the new platforms, each of which is equipped with public waiting rooms, is a covered bridge, 40 ft. in width. This carries a large waiting room and modern refreshment room each of which commands a good view of approaching trains.

Considerable care has been devoted to the comfort of waiting passengers.

The waiting room is amply furnished with restful chairs and there also is good seating accommodation in the adjoining refreshment room. This possesses an interesting railway mural (illustrated on page 387).

A separate passage-way provided with lifts, forms part of the bridge. This makes easier the transfer of luggage and mail between platforms.

The building is a reinforced-concrete frame structure, with infilling panels of London stock bricks contrasted with

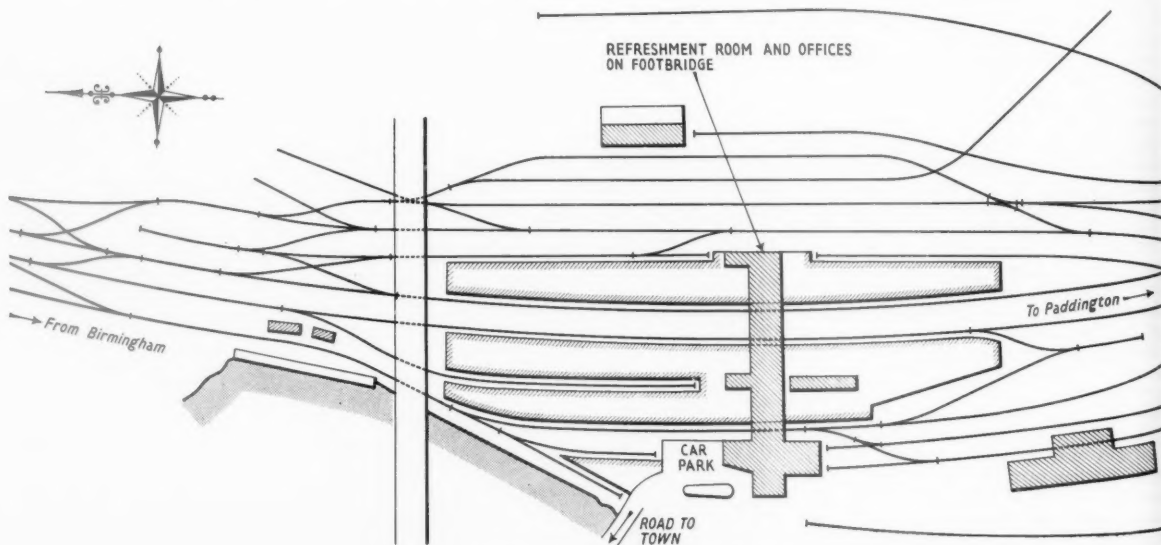


Diagram of the new station and track layout

areas of tiling, tyrolean rendering and concrete cladding slabs faced with Derbyshire spar chips.

Prestressed concrete units have been used at several points in the design, notably for the cantilevered treads on the main staircase in the concourse, the units which form the canopy roof, the decking to the bridge, and the large main beams which carry the bridge structure across the double track.

The style of the buildings is modern, with the accent on cleanliness, light, and fresh air, and much use has been made, both internally and externally, of teak in door and window frames, door facings, and seats.

The station is centrally heated and lighted by fluorescent lamps.

Improved Track Layout

The re-building of the station provided an opportunity to improve the track layout which has long caused a "bottle-neck" on the Paddington-Birmingham line. Permanent speed restrictions had existed through this station and the necessity for the main line to be occupied during shunting movements further added to operating difficulties.

Track improvements included the provision of a new Down Relief Loop line, the realignment of the main lines and the lengthening and raising of the platforms.

The entire station forecourt has been reconstructed to give better circulation for cars and taxis and a car park has



Platform view, showing bridge carrying waiting and refreshment rooms

been built on a stretch of waste land adjoining the station.

The buildings were designed in the office of Mr. H. E. B. Cavanagh, Architect, Western Region, British Railways, and Mr. A. S. Beer was Consultant Engineer for the station building and the bridge.

The main contract was awarded to

Marples, Ridgeway & Partners Limited, and a separate contract for the reconstruction of the approach road to the station was let to Hinkins & Frewin Limited, Banbury.

The whole of the work was carried out under the direction of Mr. M. G. R. Smith, Chief Civil Engineer of the Western Region of British Railways.



View of booking windows in entrance hall



Entrance hall, from the stairs shown left

Colour-Light Signalling in London Area, Southern Region

Recent installations between Clapham Junction and Richmond, and also Brixton to Herne Hill and Nunhead



New route-relay interlocking signalbox at Barnes, Southern Region, showing power-operated level crossing gates

TWO installations of colour-light signalling have been brought into service recently in British Railways, Southern Region; one in the South Western Division, from Clapham Junction through Putney and Barnes to Richmond, the other in the South Eastern Division, from below Victoria to Herne Hill via the main line and to Nunhead via the Catford Loop. This latter section is part of the extensive re-signalling now in progress in connection with electrification to the Kent Coast at Ramsgate. In addition the opportunity has been taken to install such signalling on the South London line from Battersea Park to Denmark Hill. The sections covered are indicated on the accompanying map.

Western Division Installation

After the fatal accident at Barnes on December 2, 1955, occasioned by a mistaken use of the release key of the Sykes block, which had been in operation for very many years along the route, it was stated that plans for extending colour light signalling from Clapham Junction to Richmond had been drawn up some time before, and that these were being reconsidered in connection with the modernisation plan. In his report on the accident, summarised in our issue of August 31, 1956, the late Lt.-Colonel G. R. S. Wilson stated that in view of the heavy traffic on the section, a high priority should be given to this work, now completed, and that in the meantime some berth track circuits were being provided to give additional protection with the existing equipment.

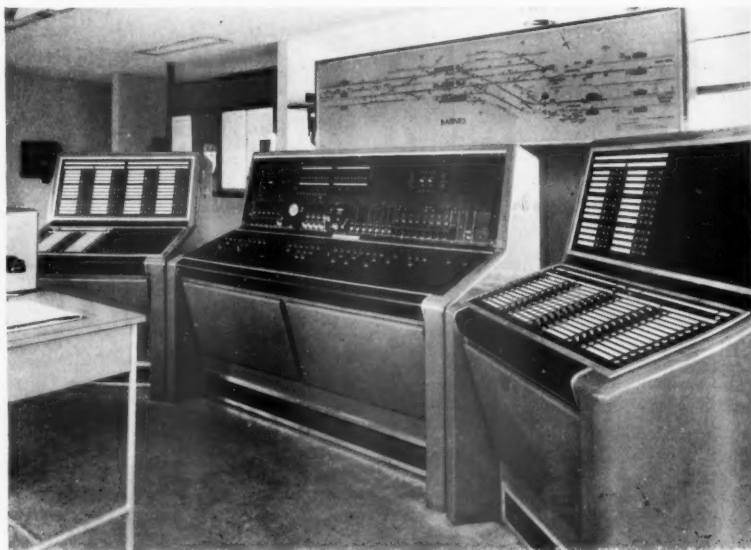
The new work, which involves a relay interlocking signalbox at Barnes, to which four tracks extend, replacing mechanical boxes at each end of the station, connects at Clapham Junction with that carried out in 1936. On May 17 of that year colour-light signalling was brought into service, simultaneously with the Wimbledon Flyover, from Hampton Court Junction to just outside Waterloo. That terminus itself

was not changed over until October 18, 1936.

There is a signalbox, known today as Clapham Junction "C," at the west end of the Windsor line side of the station, installed when the original pneumatic signalling was put in about 1911. This has been retained and refitted.

Wandsworth Town signalbox was abolished some time ago and colour-light signals provided there, but the Sykes block working was retained between Clapham Junction and Point Pleasant Junction, with the track circuits then added. This junction box controls double sets of crossover connections between local and through lines, in each direction, and the junction with the line through East Putney to Wimbledon, over which the first electric service of the former L.S.W.R. ran in 1915. On the down line to East Putney, to which station the track circuiting has been now carried, the Sykes block is being retained but on the up line block bell communication only. Putney signalbox, a simple intermediate block post, has been abolished.

The former Barnes East box, which controlled some crossovers and siding connections at the London end of the station but was opened only when required, also has been eliminated and there now remains only one siding there on the down side controlled from the new box; this itself stands next to the level crossing on the Brentford Loop and operates its gates by power. The gates of the equivalent crossing on the Richmond line remain worked from the existing gate box in the usual manner, under control, of course, from the main



Interior of route-setting relay interlocking signalbox at Barnes, showing operating desk and, on each side, train-describing apparatus

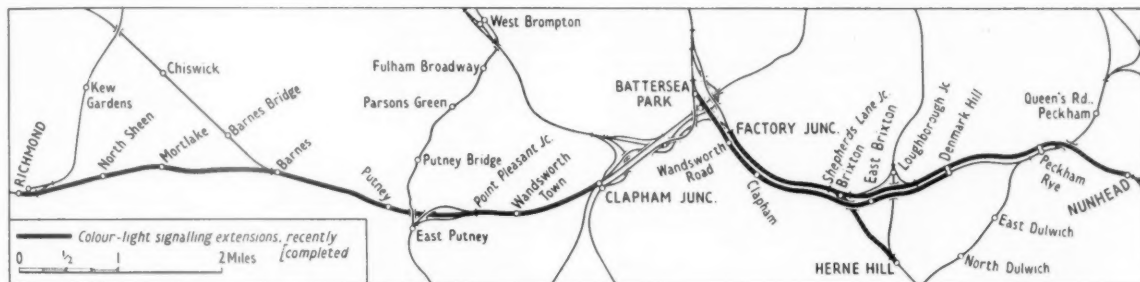
one. On the Brentford line colour-light signalling has been carried to the far side of Barnes Bridge station with the Southern Region form of all-electric Sykes lock-and-block in operation towards Chiswick.

Besides the level crossings already mentioned there is another intermediate one on the Richmond line known as White Hart, which controls the signals in each direction on established principles, with others at Mortlake and North Sheen stations where the boxes, although no longer needed as block posts, must be retained to control the gates, which have to be operated for every train, and the protecting signals. At North Sheen there are also a siding and crossover. It is unfortunately impossible to eliminate these crossings, over which there is a heavy road traffic. They have always rendered the operation of trains along this section very difficult.

At Richmond the existing signalbox, of modern design, was built before the war of 1939-45, and controls the bay platforms used by the London Midland



Interior of new Shepherd's Lane box, showing power lever frame with electrical interlocking, magazine train describers, telephone equipment, and so on



Lines in the London area of British Railways, Southern Region, showing sections recently re-signalled



New signalbox at Shepherd's Lane, Brixton, replacing mechanical boxes formerly controlling junctions on main line from Victoria to Herne Hill, and the Catford loop

Region and London Transport electric trains coming via Gunnersbury. It now controls the relevant signals in the new work. Colour-light signalling was already in use here and onwards towards St. Margarets.

A complete system of magazine train describers has been provided. In the up direction St. Margarets describes to North Sheen, with receivers at Richmond, and North Sheen to Barnes, with receivers at the level crossings between. Barnes in turn describes to Point Pleasant Junction, which latter box describes to Clapham Junction. The working in the down direction is similar. The signalling is four-aspect with an occasional three- or two-aspect signal, and with junction indicators and the floodlit disc shunting signals to the Southern Region standards. Overlaps are usually 200 yd. long. Where the new signalling links with the ordinary semaphore system the usual approach-light units are provided.

Eastern Division Installation

This is part of a very large re-signalling scheme which extends to Ramsgate, with some work on the South London line, from Battersea Park, Central Section, to Denmark Hill, on

which the conditions are very simple.

Track circuiting already had been carried as far as Factory Junction in October, 1938, and when Victoria station itself was re-signalled in June, 1939, similar arrangements were completed as far as that box on the Eastern Section.

From Factory Junction, where a new box was brought into use a few years ago, serving then as a block post for the South London line, the work has been carried through Clapham on that line and also on the line to Brixton, enabling Clapham box to be closed and its connections worked from Factory Junction.

A new box with power lever frame has been erected at Shepherds Lane, where there is a facing connection to the up slow line, which begins there, to replace not only the existing box but those at Brixton and Canterbury Road Junction, a short distance away, a plan once contemplated by the former S.E.C.R. The new signalling is carried thence down the main line for the present as far as Herne Hill, where a new signalbox, replacing those at the ends of the station was brought into use not long ago.

At Canterbury Road Junction the line divides, the left-hand route connecting with Loughborough Junction, on the Herne Hill to Holborn line, the right-hand leading to the Catford Loop

via Cambria Junction, where it meets the eastern spur from Loughborough Junction, and thence to Denmark Hill and Nunhead, where for the moment the colour-light signalling terminates.

The new signals are three- or four-aspect, as circumstances require, with junction indicators at points of divergence and disc type shunt signals. Magazine train describers were at work already between Victoria Eastern and Factory Junction and have been extended now to Shepherds Lane. Between there and Herne Hill, Cambria Junction and Loughborough Junction, however, the "single needle bell" instruments, as widely used on the Chatham section of the former S.E.C.R., are being retained for the present.

The track circuiting throughout the installations above mentioned is of the condenser fed a.c. type, either single or double rail with auto-impedance bonds, as required by circumstances. Multi-core cabling runs are provided with test junction boxes to the usual Southern Region standards; signal post telephones are installed at practically every signal.

The whole of the work was planned and carried out under the direction and to the requirements of the then Signal Engineer of the Southern Region, Mr. L. J. Boucher; his staff installed the equipment at Shepherds Lane and from

there to Factory Junction, Herne Hill and Nunhead, linking up at the two last named points with the work being carried out by the Westinghouse Brake & Signal Co. Ltd. below there and since brought into use as far as Ravensbourne. That company, which supplied the greater part of the apparatus used, both provided and installed the work between Clapham Junction and Richmond in conjunction with Southern Region staff, who installed the block joints in all cases, provided the cable run and carried out all temporary work required in the existing mechanical signalboxes. Main cables were laid and terminated by British Insulated Callender's Cables Limited. The train describers were provided by Standard Telephones & Cables Limited. The signal structures have been made in the Civil Engineer's Department, except in the case of the plain tubular posts, supplied by Tubewrights Limited.

The relay interlocking at Barnes is of the Westinghouse "O.C.S."—one control switch per route—type and follows the policy inaugurated, as far as the Southern Region is concerned, by the installation at Keymer Crossing, illustrated in our issue of May 9, 1958, but, as stated, at Shepherds Lane a power frame has been used. The remaining signalboxes being completed on the Kent Coast route are all of the panel type, but not all of the same design.

Remote-Control Electric Traction Equipment

Control of 312 sectionalising switches

A COMPLETE system of C.T.C., with remote control of electric traction currents, has been installed on the Grängesberg-Oxelösund Railways in Sweden. The installation is on the 186 route miles covered by the main line between Oxelösund and Lundvika and the branch from Rekarne to Kölbäck. The undertaking, which is owned by a company, and is independent of the Swedish State Railways, is an amalgamation of

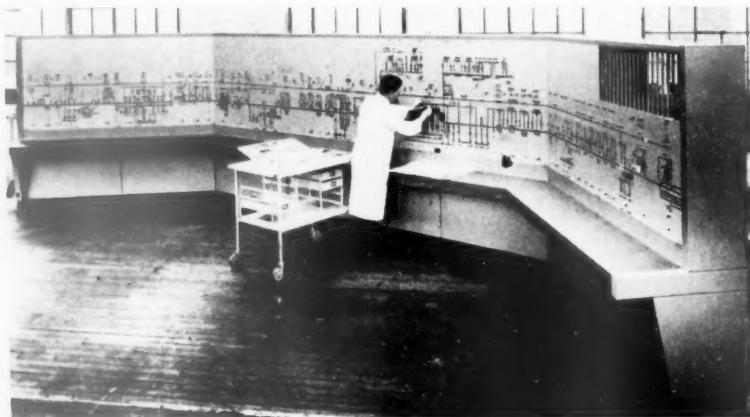
three smaller railways. Electrification is at 15,000 V. 16½ cycles, single phase. The principal traffic is iron ore.

The C.T.C. and remote-control equipment for the traction sectionalising switches and circuit breakers were constructed by Siemens & Halske A.G. at its works at Brunswick, Germany.

The traction control panel, shown in the accompanying illustration under test before despatch to Sweden,

measures about 30 ft. by 6 ft. 7 in. Through 800 push-buttons it controls 312 sectionalising switches or circuit breakers. Provision has been made for indicating the condition of 220 hand-operated sectionalising switches.

The board weighs 2,750 lb. It was assembled from 3,300 panel-unit elements, as used for panel type desks for signalboxes. There are 2,400 indicating lamps, 1,300 soldered connections, and nearly 10,930 yd. of wiring. It was shipped to Sweden in four sections.



C.T.C. and traction current control panel for Grängesberg-Oxelösund Railways, Sweden, under test before dispatch from Brunswick

IMPROVEMENTS TO CHELMSFORD PASSENGER STATION.—Because traffic has grown since electrification of the line to Liverpool Street, the public entrance, ticket office and other passenger facilities at Chelmsford Station, British Railways, Eastern Region, are now inadequate, as is the accommodation at present available for handling parcels. A scheme for improvements includes a new circulating area, where ticket examination for both up and down passengers can be carried out at a single barrier. The ticket office will be modernised and will include an enquiry counter. Left luggage will be dealt with in the parcels office, where the public lobby will be made larger. Staff amenities include a mess room with cooking facilities, sinks and larders for clerical staff and ticket collectors. Work will start towards the end of the year and will be completed late in 1960.

RAILWAY NEWS SECTION

PERSONAL

Mr. F. Q. den Hollander, President of the Netherlands Railways, has retired. He is succeeded by Mr. J. Lohmann, Chief of the Operating Department.

Sir James Williamson, V.D., M.I.E., (India), Managing Director of the Bengal & North Western Railway, 1937-43, whose death, at the age of 81, was recorded in

a director of the R. & K. Railway in 1937, and Managing Director of the B. & N.W.R. in the same year. He retired from these positions in 1943. On his arrival in India, he joined the Northern Bengal Rifles (Volunteers) and later the Gorakhpur Light Horse, which was subsequently embodied with other detached troops in the United Provinces Horse. He commanded the Gorakhpur Squadron from 1922 to 1928, when he took over

Chairman. Mr. J. Arthur Reid, Secretary of the company, will become Assistant Managing Director.

Mr. H. Cheetham, Assistant Stores Superintendent, Eastern and North Eastern Regions, British Railways, who, as recorded in our February 13 issue, has been appointed Supplies & Contracts Manager, Scottish Region, was for many years in industry and was associated with the group



The late Sir James Williamson
Managing Director, Bengal & North
Western Railway, 1937-43



Mr. H. Cheetham
Appointed Supplies & Contracts Manager,
Scottish Region

our March 27 issue, was born in Fife-shire, Scotland. He went to India, in 1898, where he was first engaged on construction works on the Bengal Doonars Railway. In 1903, he was transferred to the Bengal & North Western Railway, and was occupied for a number of years with the survey, preparation of projects, and construction of various new lines in the United Provinces and Behar. He subsequently was in charge of the Mansi Division, Tirhut State Section. He became Chief Engineer, in 1920, and, in 1928, assumed control as Agent of the combined B. & N.W.R. and the Rohilkund & Kumaon Railways. Sir James Williamson was President of the Indian Railway Conference Association, 1934-35, when he was also Chairman of the Harding (Lower Ganges) Bridge Committee. He played an important part in the re-opening of lines damaged in the earthquake of 1934. Sir James Williamson retired as Agent of the B. & N.W. and R. & K. Railways in 1936. He became

command of the B. & N.W. Railway Auxiliary Force. He was also Honorary A.D.C. to the Governor of the United Provinces. A knighthood was conferred on him at New Delhi in 1935.

Mr. F. L. Castle, Managing Director, Siemens & General Electric Railway Signal Co. Ltd., has been elected an Honorary Member of the Institution of Railway Signal Engineers, in recognition of the great service he has rendered to the Institution over many years. He was elected a Student of the Institution in 1913, an Associate Member in 1918 and Member in 1919. Mr. Castle served on the Council and various committees of the Institution for many years. He was President in 1947.

Sir Bernard Docker, Chairman, Birmingham Railway Carriage & Wagon Co. Ltd., is to become Managing Director at the end of this month. He will succeed Mr. H. J. S. Moyses, who continues as Deputy

of mills owned by Bromley & Co. Ltd. Mr. Cheetham later served with the Ministry of Supply, where he became a senior technical officer in a division of the Director General of Equipment & Stores. In 1945 he was a member of the first mission to France, Belgium and Holland, of Mutual Aid Agreement, under the Director General of Equipment & Stores. He was subsequently made responsible for the planning and production of materials from these countries and Germany. He joined the railway service, in 1946, as a consultant to the Traffic Stores Superintendent, L.N.E.R. Later Mr. Cheetham was appointed Sheet Factory Controller and Head of a Purchasing Division with the Stores Superintendent, Eastern and North Eastern Regions, British Railways. In 1950, he was appointed to the Central Purchasing Offices, British Transport Commission, and, in 1951, returned to the Eastern and North Eastern Regions where he was appointed Assistant Stores Superintendent, in 1952.



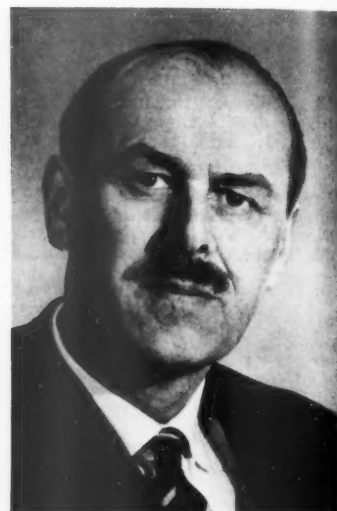
Mr. A. E. Bainbrigge

Appointed Supplies Officer,
Scottish Region



Mr. A. R. D. Roberts

Appointed Contracts Officer,
Scottish Region



Mr. F. R. L. Barnwell

Appointed Assistant Engineer (Works
Maintenance), Western Region

Mr. A. E. Bainbrigge, Assistant Stores Superintendent, Scottish Region, British Railways, who, as recorded in our February 13 issue, has been appointed Supplies Officer, joined the former Midland Railway as a messenger at Derby, in 1916, and moved to Scotland, in 1933, as a clerk at St. Rollox Stores. In 1943 he was loaned to the Ministry of War Transport, where he remained until his return to St. Rollox in 1948. In 1952 he became Assistant to Stores Officer, Scottish Region, which position was redesignated Assistant to Stores Superintendent in 1954.

Mr. S. E. Quicke, Motive Power Superintendent of the Rhodesia Railways, has retired. He is succeeded by Mr. W. A. Clegg, Assistant Motive Power Superintendent.

Mr. D. W. Glassborow, Senior Economics Assistant, Budgets Division, Finance Department, British Transport Commission, has been redesignated Economics Officer.

Mr. W. E. Waite, Head of Traffic Planning, North Eastern Region, British Railways, has been appointed District Operating Superintendent, Leeds.

Mr. S. J. Symes, Head of Section (Passenger Services), Divisional Manager's Office, London, London Midland Region, British Railways, has been appointed District Traffic Superintendent, Stoke-on-Trent.

Mr. George M. O'Rourke, Assistant Engineer, Maintenance-of-Way, Illinois Central Railroad, has retired after 54 years of service. He will be succeeded by Mr. Charles E. Weller, Division Engineer, Waterloo, Indiana.

Mr. W. Vandy, Assistant Carriage & Wagon Engineering Officer, Mechanical Engineering Department, British Railways Central Staff, has been redesignated Mechanical Engineer (Works & Production). Mr. J. J. Finlayson, Assistant Mechanical & Electrical Engineer, Derby, London Midland Region, has been appointed Mechanical Engineer (General).

Mr. A. R. D. Roberts, Senior Quantity Surveyor, Chief Civil Engineer's Department, Scottish Region, British Railways, who, as recorded in our February 13 issue, has been appointed Contracts Officer, was educated at Paisley Grammar School, the Wm. B. Barbour Academy, and Paisley and Glasgow Technical Colleges. He was apprenticed, in 1933, as an articled pupil under the late Sir James Barr, of James Barr & Son, Chartered Surveyors. During the 1939-45 war he was engaged on surveying work for the Air Ministry, and entered the service of the Scottish Region, British Railways, as Senior Quantity Surveyor in the Architect's Section of the Chief Civil Engineer's Department in 1953. Mr. Roberts is an Associate of the Royal Institution of Chartered Surveyors.

Mr. G. Patrick Eadie, Chief Engineer, Laidlaw Drew & Co. Ltd., has been appointed to the board.

Mr. I. Chisholm will assume responsibility for the Southern Scottish Division, F.A.G. Bearing Co. Ltd. during this month.

Mr. P. H. Leyton has been appointed Director of Engineering, Black & Decker Limited. Mr. Leyton, who has been Chief Rocket Development Engineer, Saunders-Roe Limited, took up his new appointment on April 1.

Mr. J. L. Burden, Managing Director of A.B.C. Coupler & Engineering Co. Ltd., has been appointed Chairman. He succeeds Mr. W. V. S. Sinclair, who has resigned as Chairman but remains a director. Mr. C. R. Curtis has been appointed an additional director.

Mr. Leslie Gamage, Chairman & Managing Director, General Electric Company, has been elected President of the British Electrical & Allied Manufacturers' Association. Mr. W. K. G. Allen, Chairman of W. H. Allen Sons & Co. Ltd., becomes Chairman of the B.E.A.M.A. Council for 1959-60. Mr. Allen is also a member of the Engineering Advisory Council and Deputy President of the Engineering Employers' Federation.

Mr. F. R. L. Barnwell, O.B.E., E.R.D., M.I.C.E., District Engineer, Newport, Western Region, British Railways, who, as recorded in our February 27 issue, has been appointed Assistant Engineer (Works Maintenance), was educated at Repton and joined the London & North Eastern Railway in 1926. From 1929 to 1939 he served mainly in the New Works and Steelwork Departments. He was Resident Engineer on many new works in connection with electrification of the Liverpool Street-Shenfield Line. During the 1939-45 war he served in the Royal Engineers, in France and North Africa, later commanding No. 1 Railway Construction & Maintenance Group, R.E., in Italy. He was awarded the O.B.E., holds the American Bronze Star Medal, and was mentioned in Despatches. He now holds the rank of Colonel in the Army Emergency Reserve, commanding 17 Railway Group, R.E. In 1946 Mr. Barnwell returned to Sheffield as Assistant District Engineer, London & North Eastern Railway and, in 1949, transferred to Stratford in a similar capacity. Two years later he moved to Inverness, Scottish Region, British Railway, as District Engineer and, in 1952, transferred to Shrewsbury, Western Region, as District Engineer. In March, 1954, Mr. Barnwell was appointed District Engineer, Newport, the position he now vacates.

Mr. L. C. Burke has been appointed Chairman of Standard Telephones & Cables (S.A.) Pty., a subsidiary of Standard Telephones & Cables Limited of the U.K.

The 1958 James Clayton prize of the Institution of Mechanical Engineers has been awarded to Mr. W. M. Heynes, M.I.Mech.E., Director & Chief Engineer, Jaguar Cars Limited, for his outstanding contribution to the design and development of the modern automobile. The prize has also been awarded to Sir F. Ewart Smith, M.I.Mech.E., Deputy Chairman, Imperial Chemical Industries Limited, for his personal contribution to the advancement of mechanical engineering, particularly in the chemical industry, and to the training of engineers.

NEW EQUIPMENT AND PROCESSES



Industrial Vacuum Cleaner

THE Aquedust is an industrial vacuum cleaner which picks up water, also acts as a dry vacuum cleaner, is portable, an efficient blower, has no internal fabric filters, and is easily used by female labour.

The unit is driven by a fully-suppressed 5/8 h.p. universal motor AC/DC all voltages. Normal power is 450 W. A spare set of commutator brushes is included.

Height of the equipment is 26 in. Maximum width of container is 10½ in., maximum width over wheels is 13 in. Depth is 15 in. Total weight is approximately 30 lb., without cable or tools.

The illustration shows the unit in use at Stewarts Lane Depot of the Southern Region of British Railways.

Further details can be obtained from Cimex-Fraser Tuson Limited, Cray Avenue, Orpington, Kent.

operations. It operates between 190-500 V. a.c. 40-60 cycles and can accommodate 16 different tapplings of welding current. Price is £63 10s. complete with accessories listed above.

The ES. 1372 can be used by one operator for welding up to 350 A. or by two operators working up to 175 A. each. When used by a single operator, the transformer is suitable for all heavy welding requirements. It operates on the voltage range 190-500 a.c. 40-60 cycles and provides for 64 different tapplings of welding current. It is supplied complete with all equipment for two operators, as listed above, at £120.

Further details can be obtained from the Industrial Equipment Division of Philips Electrical Limited, Century House, Shaftesbury Avenue, London, W.C.2.

ates gearing in vertical models. General specification is the same as for standard heavy-duty industrial models.

Further details can be obtained from the British Rototherm Co. Ltd., Merton Abbey, London, S.W.19, and Hollis Street, New Basford, Nottingham.

Arc Welding Transformers

THE following new models have been added to the Philips range of arc welding transformers:—

The ES. 1370 gives an output of 65 A for welding, with 14 s.w.g. electrodes. It is suitable for welding sheet metal and light-gauge steel and slightly heavier material in multiple runs. Brazing of very thin sheets and steel sections can be carried out by special 10 V. tapping. Cost is £34 15s. complete with primary and secondary cables, head shield, wirebrush and chipping hammer, electrode holder, earth clamp and initial supply of electrodes.

The ES. 1371 is designed for all light, medium, and medium-heavy welding

Thermometer for Diesel Engines

A NEW high-temperature thermometer has been specially designed for diesel engine exhaust gas and super-heated steam temperature indication.

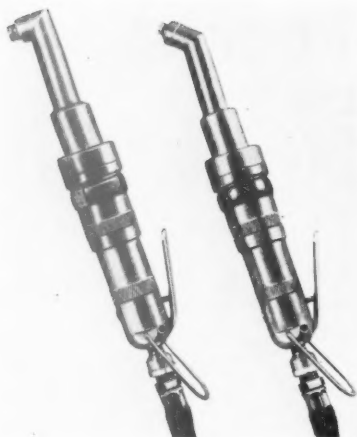
The element of special metal is claimed to operate well within its limits up to 1,200 deg. F., is free from oxidation up to 1,400 deg. F., and can withstand temporary overloads. It comprises a self-compensating and shock-resisting multiple helix carried in a stainless steel stem.

Range 200-1,200 deg. F., with dial sizes 2½ in., 4 in., and 7 in. dia. giving a scale length of 5 in., 7½ in., and 14 in. respectively.

Vertical or co-axial mounting is available, and dials can be assembled at any angle. Head is of pressure die-cast aluminium alloy.

A new flexible spring coupling elimin-





Lightweight Angle Drills

TWO new lightweight angle drills have been introduced with heads of 45 deg. and 90 deg. respectively. Capacity is $\frac{3}{8}$ in., and each is available in free-spindle speeds of 5,000 or 3,000 r.p.m., with built-in adjuster for speed variation.



These units have a weight of only 1½ lb. They are supplied with a lever throttle and adjustable exhaust deflector and suspension bail. A $\frac{3}{8}$ in. collet is provided on the standard angle models. As optional equipment, $\frac{3}{16}$ in., $\frac{1}{4}$ in., and $\frac{5}{16}$ in. collets can be supplied. Drive is by Power Vane motor.

The spindle and rotor turn on ball bearings, and needle bearings are used for mounting idler pinions. Lubrication is achieved by a built-in oiler which serves all gears and bearings.

Further details can be obtained from the Consolidated Pneumatic Tool Co. Ltd., 232, Dawes Road, London, S.W.6.

Hollow Boring

THE normal range of hollow bored bars produced by Keeton, Sons & Co. Ltd. has been extended to include bore diameters up to 6½ in. in bars up to 10½ in. outside diameter. The maximum length in the range now is 18 ft.

Hollow bored bars or fabricated hydraulic cylinders are also supplied with finished machined bores from ½ in. to 10 in. dia. to a tolerance of ± 0.003 in. Alternatively, these can be supplied with honed finished bores from 2 in. to 8 in. dia. to a tolerance of ± 0.001 in. Maximum length in each case is 15 ft.

Hollow bored forgings can be supplied up to a limit of 28 in. outside diameter and 5 tons solid weight. On lengths up

to 10 ft., the forging can be bored to a blank end or with a bore stepped with varying diameters.

A new deep hole boring plant has been developed capable of boring from the solid, in one operation, any size of hole from $\frac{3}{8}$ in. dia. to 12½ in. dia. Lengths up to 22 ft. can be supplied with larger bore sizes; up to 5 ft. with the smaller.

An illustrated brochure describing the complete range is available from Keeton, Sons & Co. Ltd., Keetona Works, Greenland Road, Sheffield, 9, from which company further details can be obtained.

Air Curtain Unit

AN improved version of an existing unit, the Miniveil Mark IX, an air curtain designed to meet the demand for equipment suitable for installation over cold-room doors where space is limited. The Mark IX, which is suitable for use on insulated vehicles designed for the distribution of frozen foods and ice cream, can be made in lengths and diameters to suit individual requirements. The input fan can be varied in output. Centrifugal or axial-flow fans can be incorporated.

The style of the unit lends itself to standardisation and simplification. Because of this, the manufacturer is able for the first time to make standard units on a

similar to that underlying the corrugated metal strips sometimes used in wooden packing cases, the method was designed for use in the inflammable atmosphere of an oil well, where welding normally is impossible.

A completed repair can be compared with a surgical suture. Steel stitches are inserted across the fracture, each stitch comprising a row of alternate holes and channels cut in the metal. Bonding material is inserted in these holes.

The Metalock keys are made of prepared metal shaped to fit these apertures. A series of keys is driven into each hole by pneumatic hammer and subsequently peened, the strength of the repair depending on the total number of keys inserted, having regard to thickness of metal and proximity of aperture.

Further details can be obtained from Metalock (Britain) Limited, Grand Buildings, Trafalgar Square, London, W.C.2.

Dehumidifier

THE Rotaire is a new dehumidifier of the adsorption type. The adsorption bed has a honeycomb structure, the cell walls of which are impregnated with a hygroscopic substance.

Diameter and depth of the drum-shaped bed are arranged to suit rate of airflow and degree of dryness required. The drum rotates slowly and at a constant speed between two fixed bipartite ducts. The adsorption air passes through these, into and through the bed, and into the corresponding section of the duct on the other side, while hot air is fed into the other section on the adsorption outlet side, passing through the bed into the adsorption inlet side.

A cooling sector is provided in most models to allow air before heating to pass through the bed and thus remove residual heat.

Advantages claimed for the new unit are: continuous drying and economy of space, weight, and power. Air used for regeneration can be of considerably lower temperature than that used in conventional units. Thus, pressure can be reduced when steam is the source of heat.

Sizes in production range from 45 to 4,000 cu. ft. per min. capacity. Designs for models up to 7,000 cu. ft. per min. capacity are available and will be in production shortly.

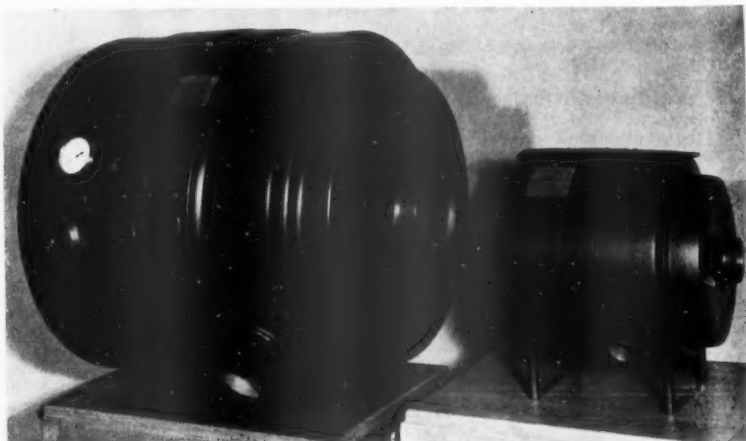
Further details can be obtained from Cargocaire Limited, Friars House, 39/41, New Broad Street, London, E.C.2.

production-line basis, a factor which may affect future prices.

Further details can be obtained from Minikay Limited, Friars House, 38/41, New Broad Street, London, E.C.2.

Pressure-Sealing Steam Leaks

THE Metalock process is a system of effecting cold repairs to cracked or fractured castings. Based on an idea



Ministry of Transport Accident Report

*Between Shepherds Bush and Holland Park,
July 28, 1958: London Transport, Central Line*

Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, inquired into the electrical fire which broke out at about 7.14 a.m. on July 28, 1958, on Train No. 2, Ealing Broadway to Hainault, on the London Transport Central Line, while it was running between Shepherds Bush and Holland Park stations. It consisted of two four-car sets, each with a motor driving car at each end and two trailers between.

The fire originated from a fierce electric arc in the power receptacle box at the rear of the leading car, the power cables to which and the steel conduits in which they lay being burnt away for 6 ft. An intensely hot torch-like flame was produced which damaged the train air pipe penetrated the rear bulkhead and entered the guard's compartment. This heated the air sufficiently to burn and blister much of the paint and fittings and sear the upholstery, and a great volume of dense smoke and acrid fumes was produced, which filled the train and tunnel. The train stopped 23 yd. short of Holland Park Station, which the driver was hoping to reach, as the result of a passenger pulling the emergency handle or of the escape of air from the burnt train pipe. The driver promptly operated the tunnel telephone wires, which cut off the traction current; this stopped the arcing.

There were only 63 passengers. Of these seven were in the leading coach and were escorted to Holland Park; later 19 others from further back also were taken there. One was carried through the train and placed on a stretcher. The remaining 37 detrained from the rear end and walked to Shepherds Bush, accompanied by a foreman ticket collector who had walked from there. One was carried part way by other passengers and detrainment was completed by 8.10 a.m. Nearly all suffered from the smoke and fumes and 48, with three railway servants, were sent to hospital, where 10 passengers were detained and one died.

The first emergency ambulance calls were recorded from public telephone callboxes at the two stations at 7.59 and 8.1, when the Traffic Control sent one, and again at 8.16. An unknown person made one at 8.3, a minute before which Control had summoned doctors. The first ambulance reached Holland Park at 8.8 and Shepherds Bush at 8.18; a doctor reached the former station at 8.6. All requiring hospital attention were taken away by 8.37. The London Fire Brigade, advised at 8.4, reached Holland Park 5 min. later.

The following train, No. 36, was held at Shepherds Bush by loss of current and its passengers detrained. No other train was stalled between stations. The defective one was shunted clear and normal working resumed at 10.55.

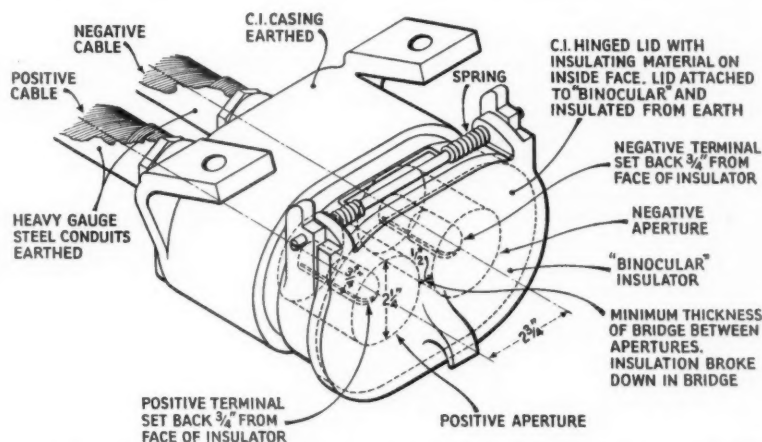
Equipment of Car

The car concerned, No. 3645, came into service in 1928 and had run about 1,337,000 miles; mileage since the last major overhaul in 1955 was about 163,000. Its power cables were renewed in 1948. The last routine inspection, due every four weeks, took place on July 23, five days before the fire. The report contains a full description of the electrical circuits, and the general layout of the equipment of the car, with details of the braking and lighting systems. It emphasises that there

is never any obstacle to passengers passing right through the train as the doors concerned have no locks. In the ordinary way power is picked up from the conductor rail shoes, but when the car is being moved in a depot current can be taken through a power receptacle box from a jumper cable from an overhead line. Before this accident two were provided, one at each end of a motor coach, one on the off, the other on the near side. The accompanying drawing shows the construction of such a box and the report contains also photographs of the fused box and the burnt cable conduits leading therefrom.

These boxes are alive when the shoes are on the conductor rails but there is no bus line through the train from them. Such an item is prohibited by the Minister's Requirements concerning tube railways. The leads from each box are

nearly half a mile from the latter. The bare tunnel wires, normally energised at 6 V., and connected to head-wall telephones in the stations and special sub-station telephones via relays, if pinched together, operate audible and visual alarms at the sub-stations and cause the traction current to be at once cut off. Lifting a head-wall telephone receiver has the same effect, as does also the attachment to the wires of a driver's hand telephone set. The relays cannot be re-set while these telephones are in circuit, or the wires kept in contact. Re-setting the relays does not restore the traction current but does allow the driver to use the special Drico telephone to speak to the Controller. He cannot use this while the relays are de-energised. On cutting off the power, lights at 50 ft. intervals become lighted in the tunnel. Each driver's cab has a short-circuiting bar to place across



Drawing showing design of power receptacle box involved in fire on London Transport Central Line on July 28, 1958

run in heavy steel earthed conduits which run parallel for a certain distance.

The jumper cable plug is inserted in terminals, well back in a "binocular" insulator in a cast-iron casing (see drawing), with open end closed by a spring-closed lid, itself mounted on the insulator. The cars have 52-V. battery sets, charged from main supply, to feed among other things emergency lights, two 15-W. bulbs in each passenger compartment and one in each driver's. These come on if main power is lost. The batteries serve for passenger "press button" door operation and the telephone circuits between guard and driver and driver and Traffic Controller, as mentioned later. To bring a train into service a "position" and an "auxiliary position" switch key must be in place in the guard's compartment. Removing the former prevents operation of the side (air) doors by the guard but does not cut out the local push-button control. Removing the auxiliary key immobilises these doors, extinguishes the emergency lights and renders it impossible for driver and guard to telephone to each other or for the driver to speak to Control.

The traction current on this section comes from sub-stations at Wood Lane and Notting Hill Gate: the train stopped

the conductor rails and prevent any restoration of power. It is important to note that attaching the Drico telephone to the tunnel wires does not alarm the sub-stations or switch off the power. A driver can thus call a sub-station or the Controller, but he cannot be called by them: the guard and driver can call each other in the train intercommunication equipment.

An appendix to the report gives a complete list of the messages received by or issued from the Leicester Square Traffic Control and relevant to the accident, from one received at 7.16 a.m. from the Wood Lane signalman until 10.47, when Holland Park reported the defective train as made fit to run and departing, 28 messages in all.

Rules and Regulations

The report contains the text of Rules 187, 188, 242, 243, 244, 245—or their relevant paragraphs—with extracts from the appendix to the working timetable, from a traffic circular, a supplement to another, and an instruction to sub-stations, dated as recently as June 23, 1958, covering procedure to be followed when a tunnel telephone call is received.

Briefly their effect is that passengers may

be detained in a tube only on the instructions of the Controller and under a stationmaster's supervision. If the train is in a position such as obtained in this case, detrainment must be from the front. A traffic circular issued in 1952 allows passengers, on the Controller's instructions, to be detained by the staff themselves in the case of serious fire, fierce arcing, or dense smoke. A guard leaving his position is required to take both the switch keys already mentioned (on the Central Line) and if traction current is off ensure that the emergency lighting is in order, failing which he must light candles. In a case of slight fusing a train is to be taken on to the station but if it is serious, stopped immediately. If a fire has been caused by fusing, power must be at once taken off.

Should the fire brigade be required the Controller must be advised and on being informed of a fire of any sort he should, if it is in the London Fire Brigade Area, advise the Brigade Headquarters. If, after the tunnel telephone system has been operated, no message has been received by a sub-station from a driver stating the cause of the emergency the Controller may, after 7 min., authorise traction current to be restored.

Course of Events and Evidence

The most important parts of the extensive evidence are incorporated in what follows and are reflected in the conclusions reached by Colonel McMullen, given below. He heard most useful evidence from 11 passengers, three in the leading car, three in the next, one in the fourth, two in the fifth, one in the seventh and one in the last car; also from 15 of the railway staff and two high officers of the London Fire Brigade and others serving under them.

There was some contradiction between the various statements but it proved possible to give the main series of events as follows:—

When the driver saw the initial flash he switched off his controller but, as the arcing continued, re-opened it and tried to reach Holland Park. The train was stopped, however, by the brake application. He at once used the tunnel wires to cut off the current and stop the arcing. Passengers crowded into his compartment. This, and the fumes, hindered him from connecting his hand telephone. He failed to get a reply from the sub-station (the apparatus was found to have been in order).

The sub-station staff carried out the prescribed tests and then tried without success to telephone to the driver. He tried to speak to the Controller by the Drico equipment by then rendered useless by the guard having left his compartment with the keys already mentioned. Other attempts to telephone to him and the sub-stations proved abortive. The driver had put down a short circuiting bar and he detained seven passengers and later, with a divisional inspector who had arrived at Holland Park, returned to his train and detained another 19.

The guard had tried, with no result, to telephone to the driver and began walking through the train. The smoke became thicker so he came back and went to Shepherds Bush and told the stationmaster that passengers were dying or being asphyxiated. He was instructed to return. To ensure this a foreman ticket collector was sent with him. They met some passengers who had detrained themselves. After helping the remaining 37 out of the train the foreman led them to Shepherds Bush.

The Head Controller at Leicester Square is assisted by a Divisional Controller for the Central Line. The latter knew that tunnel wires had been operated and that smoke was coming from the tunnel, but had not heard from the driver; he decided to have current restored in 7 min. and send train No. 36 to investigate, but learning that passengers were on the track near Holland Park, cancelled the order. At 7.58 they were for the first time informed that assistance was required by the acting operating assistant, arrived at Holland Park: they then summoned ambulances, doctors, and the fire brigade.

The importance of the evidence given by the guard and Shepherds Bush stationmaster called for careful questioning to arrive at the exact course they had followed and why. The tunnel in rear of the train was at length ascertained to be clear by the driver of the waiting train No. 36 who walked to train No. 2 and back with another member of the staff. Careful investigation also was required into the failures to establish communication with the sub-stations and the course of events there. The evidence of the two Controllers showed that at 7.21 it was learned that smoke was coming from the tunnel at Holland Park, thought to be from a fused cable. At 7.32 it was known there were persons on the track and orders given to keep the current off. They insisted that no information was received from Shepherds Bush about the guard arriving there, but the stationmaster declared he did advise them. Orders were later given to detrain but until 7.37, the Controllers declared, they were unaware that a train was in trouble. At 7.58 standing arrangements for calling emergency services were put into effect. Not until 8.10 had they any intimation that anyone had gone back from the train to Shepherds Bush; instructions to send ambulances there also were not sent, through an oversight.

Evidence was given covering the tests made on the electrical equipment of car No. 3645 five days before the accident, and on the tunnel wires and telephone equipment after it. The emergency train lighting was seen to be in order and information was given to Colonel McMullen on training methods and the effect on the Rules of introducing the Drico telephone equipment. The important evidence given by the fire brigade officers contained a statement to the effect that an agreement reached in 1948 had not been fully implemented by London Transport which for many years had seemed reluctant to use their services. They thought they should be called whenever there was a possibility that their services might be needed, and as soon as possible. It was immaterial if an incident has been dealt with by the time they arrived. They arranged specially to avoid alarming the public unnecessarily by their presence at a station.

A practical test was made at Colonel McMullen's request in an attempt to reproduce the course of events of the accident, particularly with regard to the attempts to establish communication with the sub-stations.

An electrical test was made on a "scrap" driving car and the following facts were established:—(1) An arc created artificially between a receptacle box terminal and box lid, even with that earthed, did not maintain itself; (2) it was difficult to create an arc between positive and negative terminals, but it then maintained itself and burnt through to the back of the box; (3) the arc there split into two, between each cable and its conduit; (4) these arcs soon got inside

the conduits as the cables burnt away faster than they and the undispersed ionised gases thus became ejected from the conduits in intensely hot torch-like flames, 2 to 3 ft. long; (5) an arc between parallel cables spaced as those on car No. 3645 but not in conduit did not maintain itself because the gases became dispersed.

Inspecting Officer's Conclusions

Nobody is held responsible for the fire and the two drivers and the acting operating assistant are specifically excluded from all criticism by Colonel McMullen who, however, considers that the resulting situation was not dealt with very satisfactorily by certain others. It seems that the arc started directly between positive and negative terminals and that the insulator was cracked across the $\frac{1}{2}$ in. bridge (see drawing), possibly from a blow from a loose plug and that rain, falling heavily that morning, found its way in, as the box lid was not fitting well.

Water must have reached the base of the binocular apertures and seeped into the crack; assisted probably by metallic brake dust this enabled current to flow and eventually an arc formed, burning away the insulator bridge. This penetrated to the back of the box and then burned between the leads and their conduits, not directly between the leads. The box lid was found partially open, due possibly to a broken spring, which could have caused water to enter. This may also have arisen from the explosive nature of the arc, or both causes. (One or two lids not fitting well were noticed later.)

Damage to the insulator may have been of long standing. That the tests had not disclosed leakage is understandable. They were between terminals and earth, not the terminals themselves, but had the latter test been made no fault might have been found with the box dry. While attaching no direct responsibility to those making the electrical tests Colonel McMullen considers the arrangements for ensuring they were properly carried out to be not satisfactory. The driver is not criticised for endeavouring to reach Holland Park platform, which he saw a short way ahead. Thick smoke and acrid fumes caused serious discomfort, with some injury to passengers; there was no panic but some became alarmed and broke windows, which merely admitted more smoke.

Arcing could not have lasted more than a minute but the current must have been considerably greater than in the subsequent tests; it was insufficient, however, to bring out the circuit breakers the eventual opening of which disclosed a very heavy load. The torch-like flame impinged on and burned quickly through the bulkhead. The white-hot gases entered the car and made the air very hot. (This effect could not be reproduced with the scrap car.) It has to be considered how the passengers escaped being injured by the heat; they said the flame broke through before all had left. It is thought that by the time the train stopped the majority were in the driver's cab or equipment chamber corridor, and the last passenger may have escaped injury just in time. From the nature of the damage Colonel McMullen concludes that no flash-over of gases occurred after the passengers had left.

There is the question of the driver's inability to communicate with the sub-station. Conditions in the cab were very bad, with everyone coughing badly. No doubt the tunnel wires were pinched very soon after the train stopped, but it is thought that when the driver came to attach his telephone his physical condition

prevented him from speaking immediately. When he did speak, the sub-station attendant had left his telephone. The driver could not speak to the Controller because, by then, the guard had removed his keys. Realising that current might be restored, he put down a short circuiting bar. His detrainment of passengers on his own responsibility was contrary to rules, but considered fully justified. In a most difficult situation, he obeyed the rules regarding establishing communication and perhaps spent too much time on that. He could have started detrainment earlier, or at least gone to the station for assistance. His returning twice to the train showed considerable devotion to duty.

The Divisional Inspector also displayed courage in proceeding into the smoke: his message to the controllers about the driver arriving with passengers evidently was misunderstood; their state was such that a request for emergency services should have been made, but was not in fact until 18 more arrived and then by the acting operating assistant. The foreman on the platform does not seem to have acted with much intelligence on hearing voices. He could have found out what the trouble was by speaking fairly loudly to the driver, as a test confirmed, and then given the Controller full information.

There was much conflict of evidence regarding events at Shepherds Bush. The guard tried to communicate with the driver and to go to him. As he was suffering from the fumes, he decided to go to Shepherds Bush. He complied so far with the regulations except in not lighting candle lamps. A more determined man might have got further forward and probably seen the smouldering, enabling him to give a more coherent account of things. He is not criticised for going back, for in a difficult position not covered by rules he adopted the only course open. The stationmaster told him to go back and sent a man with him.

Faced with conflicting evidence Colonel McMullen considers it very doubtful whether the stationmaster did inform the Controllers about the guard; this could not have failed to impress them with the seriousness of the situation, pre-occupied as they might be with matters at Holland Park. Obviously the stationmaster considered the guard to be greatly agitated and his story grossly exaggerated and therefore presumably did not pass the information on. His one thought was that the guard had disobeyed rules; he made a serious error of judgment in virtually taking no action except to order him to go back. Despite what the guard and his companion said, Colonel McMullen is sure passengers already were detrainment when they arrived back and that their remonstrations understandably were ignored; smoke and fumes still were bad. The foreman must have remained until nearly all the passengers were out when he returned rapidly to his station without helping to carry the passenger needing aid: his actions were not creditable to him.

The two Controllers were extremely busy and without information from the driver, Colonel McMullen thinks they must have realised sooner than they admitted that a train was in trouble. When told at 7.32 that voices, believed to be those of staff, were heard from the tunnel they must have realised they could only be train staff. They knew of no maintenance staff having entered the tunnel. There is other evidence to support this.

Nor can Colonel McMullen accept the statement that the Controllers did not know a train was on fire until informed at 7.58 by the acting operating assistant, for

the fact was mentioned in a message to the shift engineer at 7.35 and in another 2 min. later from the Holland Park foreman. He finds it difficult to understand why emergency services were not called to that station sooner, also why the fire brigade was not called at 7.21, as the Controllers then knew the tunnel wires had been operated. (The Operating Manager, however, would not have expected that, but considered such action should have been taken at 7.37.) Even at 7.58, when the message was that a car was "guttled" 6 min. elapsed before the brigade was called. The Controllers were working under difficulty from lack of definite information, but are considered not to have taken adequate and prompt action on the available evidence.

There is no doubt that the emergency train lights came on but were put out when the guard removed his keys. Complaints of inability to open certain end doors readily can be explained by local conditions.

Remarks

This is the second incident of this kind on a tube train in the last five years. There were 13 on the Metropolitan and District lines; three of these arose, however, from faulty contact between a jumper plug and a terminal. These trains have a through bus line and four of the cases with them occurred in depots. The whole of the incidents took place on vehicles constructed before 1938. This one on the Central Line is the most severe on record and very serious notice of it has been taken by London Transport Executive. The rear receptacle boxes on all tube driving cars were disconnected with commendable rapidity. Immediate careful inspection was made of the remaining boxes and a few having minor defects replaced. A system was instituted by the Chief Mechanical Engineer for the special periodical overhaul of all boxes, to include replacement of binocular insulators. Protective material was placed over the cable conduits from the front boxes, ensuring that arcing cannot penetrate to the driver's compartment. Work has been completed on all Central Line cars and is proceeding rapidly on others. Instructions were issued to ensure correct testing of circuits.

Tests disproved the theory held when the older cars were constructed that arcing between cable and conduit would not propagate itself because core and conduit would become fused: they revealed the intensity of the torch-like flame produced and indicated the steps necessary to ensure arcing between cables, or cable and earth, becoming broken before serious damage occurs.

Colonel McMullen considers there is little likelihood of serious arcing on tube stock constructed since 1938; arrangements are such that an arc ought not to maintain itself, but should it do so it would not pass the protective material under the floor. Of about 600 vehicles having cabling arrangements as on No. 3645 all but 60 will be replaced by the end of 1963; those remaining will be used on the Northern City, Epping-Ongar and Roding Valley lines. Their cables will be renewed as it will be impracticable to alter its run; nonmetallic conduit will be inserted behind the boxes. This, with the protective material, should effectively prevent recurrence of a fire of this kind.

To deal similarly with the other 540 vehicles or isolate the conduits from earth is not practicable; their cabling must remain and, if not to be renewed, is preferably left undisturbed. With increased

attention to the boxes there is less chance of serious arcing, while it is unlikely that a flame would penetrate a compartment. Roughly half the Metropolitan and District stock was built before 1938. The old Metropolitan vehicles are scheduled for replacement over the next three years. Altering the cabling is impracticable but the boxes can be given greater attention. On stock built later "fire breaks" are being created behind the boxes and floor protection. On District stock the boxes are being given special attention: it is hoped also to make "fire breaks."

Removal of a guard's keys ought not to extinguish the emergency lights and cut out the Drico communication: it has been decided to discontinue the particular door control, use of which created this situation. It will be eliminated from existing stock as soon as practicable and the regulations then altered to ensure that lights and communication facilities can be left functioning. Colonel McMullen considers public safety calls for amplification of rules and regulations covering staff's action when there is a train fire. Strict compliance with existing rules had been impressed on the staff, but such did not cover this case while they also do not seem applicable—or particularly so—to a tube train. The Drico telephone circular mentioned, referred to removal of passengers and implied liberty to detain in presence of fire, fierce arcing or smoke, by permission from the Controller, without supervision; but in this case he could not be spoken to by the driver. Fire might disrupt this equipment and the "intercom" working, and prevent a guard from going through a train, leaving him no resource but to go to the station in rear. The Operating Manager informed Colonel McMullen that the rules would be suitably amplified. It is important that drivers and sub-station attendants remain on the telephone long enough to ensure speaking and they have been suitably instructed; the correct method of exchanging messages is being also emphasised. Had certain messages been repeated back, misunderstandings might not have occurred. Instructions are to be issued to call the fire brigade in all cases, except such small fires as obviously can be at once extinguished. The duties of Head and Divisional Controllers are being re-arranged. The latter will remain at divisional headquarters and deal with any incident itself: the former will be at main headquarters and deal with major matters in which other departments and services are involved. This should have a very beneficial effect. Speech recording apparatus is being considered to facilitate supervision of Control office work and aid particularly the dealings between the staff there and that outside.

Colonel McMullen expresses his thanks for the ready help he received from L.T.E. officers in compiling his report.

FIRTH & CO. LTD. WIRE WORKS REBUILT.—A new two-storey factory building at Warrington, incorporating a re-designed metallurgical laboratory, shortly will be occupied by Firth Co. Ltd. for making wire and wire products, including fencing. The building replaces one destroyed by fire in 1957. It is of reinforced concrete construction, with a single-span roof structure 90 ft. x 160 ft. to give unobstructed floor space. Equipment, capable of doubling the production capacity of the previous factory, includes wire-drawing, straightening, and cutting machines, and winding and coiling plant.

Electric Locomotive Depot at Longsight

Work begun in January on the super-structure of the electric locomotive maintenance depot at Longsight, near Manchester, British Railways, London Midland Region, is well forward. The depot is being built in connection with a.c. electrification of the Manchester-Crewe line. It is due for completion in November.

The depot will consist of a maintenance shed; workshops; stores; offices; messing accommodation; a new carriage washing plant to replace the existing plant. Foot-bridges over the siding and a subway extension to Longsight Station will give access to the depot.

The maintenance shed is 300 ft. x 57 ft. 6 in. wide and 19 ft. 6 in. high to eaves. The framework is of glued laminated timber portal frames at 15-ft. centres with insulated protected metal decking and double patent glazing to the roof and insulated asbestos cement sheeting and vertical glazing at the sides. In the shed there will be two tracks on inspection pits 278 ft. long, constructed in concrete with jacking strips alongside.

The workshop and stores section of the depot is 105 ft. long and 59 ft. wide with timber frames and cladding, similar to the maintenance shed. The amenity building adjoining the maintenance shed is in brick with pre-cast reinforced concrete roof beams. Part of the existing reservoir had to be filled in and the walls of the buildings carried on reinforced concrete beams spanning between the piers.

Parliamentary Notes

Using Space over Railways

Mr. Ronald Russell (Wembley S.—C.), in a debate on the Government roads programme on March 17 asked if everything possible was being done to use the space over railways. He said he knew it was probably very difficult to build a road which would clear the tops of railway bridges on the two-track lines. He understood that part of the South Wales-Midlands road near Smethwick was being built over a viaduct and was costing £1 million a mile, but he imagined that that saved a good deal of land. He hoped that every attention was being given to the possibility of similar plans elsewhere. The main line to Paddington, over which there were not many bridges, was a good example. The Minister wished that motor-cars should not be brought to London, but should be parked at railway stations on the outskirts. Use should be made of the space above the Metropolitan and former Midland and G.C. lines at West Hampstead. The Minister had said it was uneconomic to build car parks over railways unless other use was made of the space. Encouragement should be given to the building of offices on these sites, with car parks either above or underneath the offices but both built over the railways.

Closing of Hull & Barnsley Line

The proposed closing to all traffic of the former Hull & Barnsley Railway line was discussed as an aspect of unemployment in Hull in an adjournment debate in the House of Commons on March 26.

Captain M. Hewitson (Hull W.—Lab.) said the B.T.C. had stated that this was "streamlining" to achieve economies. The Commission, he added, was to put the transport of coal from mid-Yorkshire to the docks at Hull on to the main line, and whereas it took now approximately

4 hr. to bring a coal train to the docks at Hull, on the new service, over the main lines, it would take over 12½ hr. When that took place, a number of men would be thrown out of work. He suggested that an effort should be made to use Hull, which had always been a medium for the export of coal, by the "most favoured nation" kind of treatment, and that the Commission should keep open the old Hull & Barnsley Railway, so that men would not be thrown out of work.

Questions in Parliament

Victoria Line

Mr. Eric Fletcher (Islington E.—Lab.) asked the Minister of Transport & Civil Aviation on March 16 what advice he had received from the London Travel Committee on expedition of plans for the proposed new underground railway from Victoria to Walthamstow.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary: The Committee has not yet reported to us. I understand, however, that the Committee is now examining the proposal for the line.

Mr. Fletcher: There is increasing urgency in the need to start this new tube, which is regarded as the only real solution to the growing traffic congestion in North and North-East London. Will the Minister confirm that, as far as L.T.E. is concerned, it is anxious to begin the work?

Mr. Nugent: L.T.E. is anxious to begin it, but, as it is a very expensive proposition, estimated to cost between £50 and £60 million and lose £3 million a year, we need to weigh the pros and cons very carefully to decide whether the money could be better spent in other ways.

Mr. Ernest Davies (Enfield E.—Lab.): Now that there is manpower available and unused capacity in the steel industry, will the Minister not agree that an opportunity does offer itself to proceed with the construction of the tube?

Mr. Nugent: I agree that it is an attractive proposition, but we still have to weigh the relative pros and cons between it and other kind of work in London.

Mr. A. G. Bottomley (Chatham & Rochester—Lab.): In view of the fact that, after pressure from the Member for Walthamstow East (Mr. J. Harvey) and from the Member for Walthamstow West (Mr. E. C. Redhead), assurances were given that work on this tube would commence, why is there now any hesitation?

Mr. Nugent: For the reasons I have explained. We are not yet quite sure whether it would be good value.

Mr. G. Gibson (Clapham—Lab.): Even if it costs £50 million; which is only an estimate, the saving and help it would give to the people and businesses of London would be well worth while, and it would probably save a good deal more money than that.

Mr. Nugent: Apart from the very large financial implication and the loss which we estimate, in running, we are not yet sure whether this would be the best way to spend between £50 million and £60 million in improving London's traffic system.

Tube Line Project Estimates

Mr. Ernest Davies (Enfield E.—Lab.) asked the Minister of Transport & Civil Aviation on March 25, on what basis he estimated the Victoria line would operate at a loss of £3,000,000 a year; and to what extent that sum includes interest on its capital cost.

Mr. Watkinson: The B.T.C. informs me

that, estimating the cost of the Victoria Line at about £55 million, between £2½ million and £2½ million, depending on interest rates, of the estimated annual loss will represent interest charges on capital.

Mr. Davies: This adds justification to the argument that the Victoria Line should be proceeded with by the Government as a Government project, in the same way as roads are built, so that the interest charged to London Transport could be dispensed with. In view of the long time that construction would take, it is difficult to make these estimates so far ahead, and by the time the line is constructed the number of people desiring to travel underground, because of the increased traffic congestion, will be so great that the loss may not nearly be as substantial as is suggested.

Mr. Watkinson: All this question of loss is relevant; but what is more relevant and important at the moment is whether £55 million laid out on a new tube would pay a better traffic dividend than £55 million laid out on surface road works, which is the problem that the London Travel Committee is grappling with at the moment.

Train Service Delays

Lt.-Colonel Bromley-Davenport (Knutsford—C.) asked the Minister of Transport & Civil Aviation on March 18 whether he would give a general direction to the B.T.C. to the effect that it must at the commencement of every week display at all its railway stations a list setting out the average delay in the arrival and departure of all trains stopping at and starting from the station concerned, together with some indication as to whether that average can be expected to continue during the following week.

Mr. G. R. H. Nugent, Joint Parliamentary Secretary: No. Punctuality of trains is a matter of day-to-day management, for which the Commission is responsible.

London Transport Executive Chairmanship

Mr. Ernest Davies (Enfield East—Lab.) asked the Minister of Transport & Civil Aviation on March 25, whether he would now state whom he proposed to appoint as Chairman of the London Transport Executive in succession to Sir John Elliot; and which members of the Executive have had experience in the organisation of workers in accordance with Schedule 2 relating to provisions as to executives, of the Transport Act, 1947.

Mr. Harold Watkinson: A successor to Sir John Elliot has not yet been appointed. There is one present member of the Executive who has spent a lifetime in work involving the organisation of workers, and there are other members of the Executive who have had wide experience in staff matters.

Mr. Davies: Does the Minister appreciate the desirability of reaching a quick decision as to who should succeed Sir John Elliot, in view of the difficulties confronting London Transport and the undesirability of having a chairman in charge whose resignation is in his hands? Secondly, whilst it is true that Lord Geddes has spent his life in the organisation of workers, is it not a fact that he is only a part-time member?

Mr. Watkinson: The present circumstances are no different from those of the past. As to the successor to Sir John Elliot, I am anxious to find a man who will perform as able and successful public service as Sir John Elliot, and that may take some little time.

Contracts and Tenders

Diesel-electric locomotives for Egyptian Republic Railways

Henschel-Werke G.m.b.H., of Kassel, Germany, has received an order from the Egyptian Republic Railways for 108 main-line diesel-electric locomotives to be powered by General Motors (Electro-Motive) engines and electrical equipment. Of this total, 70 locomotives are to be of Bo-Bo type, of 1,425 b.h.p., 75 m.p.h. top speed, and of over 80 tons in weight. The remaining 38 locomotives are to be of AIA-AIA axle notation, of 1,900 b.h.p., and with an adhesion weight of 88 tons; eight of these locomotives are to have a top speed of 65 m.p.h., and the remainder 75 m.p.h.

Rhodesia Railways has placed the following contracts:—

D. Drury & Co. (Rhodesia) Ltd., Bulawayo: one Asquith 4-ft. 6-in. type "OD.1" radial drilling machine complete with electric, coolant pump, and portable work table, value £1,695; one Webster & Bennett 48-in. duplex boring and turning mill, series "D.H.", complete with electric and spares, value £10,021; one Herbert Hunt twist drill grinding and sharpening machine, model No. 3, Universal, capacity $\frac{1}{4}$ in. complete with electric and spares, value £919; and one D.S.G. Type "13/1" centre lathe complete with electric, hydraulic copying attachment and spares, value £2,533.

Wilfred Watson Limited, Ndola: one Aveling-Barford model "GDQ" 10-ton road roller, value £3,226.

Joshua Heap & Co. Ltd.: one Heap's 3-in. patent automatic tangential die-head screwing machine complete with electric and spares, value £1,468.

Atlas Copco (S.R.) (Pvt.) Limited, Bulawayo: one Atlas Copco 115 FD, portable diesel-driven air compressor, two-cylinder, 115 c.f.m., value £999, and one Atlas Copco "P60ET" concrete breaker, value £62 10s.

Rheinstahl Siegener Eisenbahnbedarf A.G. (SEAG) has received from the Swiss Federal Railways an order for 200 lift-dump wagons of 40 cu. m. capacity, with hydraulically-operated mechanism. These wagons are mainly for coal traffic, with direct discharge into road lorries.

British Transport Docks has placed an order with Richard Dunston Limited, Thorne, for a diesel single-grab dredger for service at Kings Lynn Docks, situated on the east bank of the River Great Ouse. The vessel has been specially designed to combat the increasing siltation at the port.

Matisa Equipment Limited has received a contract from the South African Railways for 22 lightweight ballast tampers at a cost of £44,594.

British Railways, Eastern Region, has placed the following contracts:

Clough Smith & Co. Ltd.: provision of electrical installation in main shed and yard at Peterborough New Goods Depot.

English Electric Co. Ltd.: supply, delivery and erection of electrical equipments for 11 2,500 h.p. Bo-Bo electric locomotives being constructed at Doncaster Works for Southern Region.

Thomas Fletcher & Co. Ltd.: repairs

to six arches of bridge No. 155, between Woodhouse and Waleswood.

Carter-Horseley (Engineers) Limited: repairs to underline bridge No. 1,376, between Hackney Downs and Rectory Road.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Pakistan:

Relay interlocking type power signalling installation at 35 stations on the double track 5-ft. 6-in. gauge section between Karachi and Rohri of the North Western Railway, and 32 stations on the single track metre-gauge sections, Chittagong-Akhaura, Bhairab Bazar-Tangi, and Tangi-Mymensingh of the Eastern Bengal Railway.

The Issuing Authority is the Government of Pakistan, Ministry of Railways & Communications (Railway Division). The tender No. is W.1-58/INT/3. Bids should be sent to the Director General Railways, Ministry of Railways & Communications (Railway Division), Government of Pakistan, Karachi. The closing date is May 28, 1959. Local representation is essential. The Board of Trade reference is ESB/6954/59.

95 wheels, chilled cast iron, 23 in. dia. tread, $4\frac{1}{4}$ in. wide, $7\frac{1}{2}$ in. boss for assembly of DA/20. To N.W.R. part No. D-24 or drg. No. D-24, alt. nil., conforming to P.R.S. specification No. R-19-49 as far as applicable.

60 wheels, chilled cast iron, 23 in. dia. tread, $4\frac{1}{4}$ in. wide, $7\frac{1}{2}$ in. dia. boss, $3\frac{1}{4}$ in. rough machined bore (6 in. \times $3\frac{1}{4}$ in. and 5 in. \times $2\frac{1}{2}$ in. journal), to N.W.R. part No. D-33 on drg. No. D-24, alt. nil. conforming to P.R.S. specification No. R-19-49 as far as applicable.

4,580 steel tyres, 3 ft. 7 in. wheel (B.G.) for assembly to WA/23 to I.R.S. drg. No. W/492, alt. 12, conforming to P.R.S. specification No. R-15-58 as far as applicable.

1,800 steel axles, 16 tons, 10 in. \times 5 in. journal (B.G.), to N.W.R. drg. No. D-52, alt. nil. conforming to P.R.S. specification No. R-16-58 as far as applicable.

The issuing authority is the North Western Railway. The tender No. is 210-S/10 (PIC)-59. Bids should be sent to the Chief Controller of Stores, North Western Railway, Lahore. The closing date is April 20, 1959. Local representation is essential. The Board of Trade reference is ESB/7634/59.

12 items of locomotive and carriage and wagon vacuum brake metallic fittings, including vacuum cylinders, van valves, alarm operating lever gear, barrels and piston rods for cylinders, lever bearings for alarm operating gear, hose connectors, and vacuum gauges.

The issuing authority and address to which bids should be sent is the Chief Controller of Stores, North Western Railway, Lahore. The tender No. is 210-S/14 (PIC)/59. The closing date is April 22, 1959. Local representation is essential. The Board of Trade reference is ESB/7636/59.

From Portuguese East Africa:

1 remote-controlled signalling installation.

The issuing authority is the Ports, Railways & Transport Department, Lourenço Marques. The tender No. is 61/59. A provisional deposit of Esc. 7,500 must be made by tenderers. The closing date is May 11, 1959. Drawings and specifications are obtainable at the Railway Warehouse at Lourenço Marques through the local agents of United Kingdom firms interested. The Board of Trade reference is ESB/6845/59.

From Formosa:

25 items of axles for locomotives, TRA-drg. No. 1-354, material to be conformed with specification JIS-SFA55 or ASTM designation A236-52T class D or G.

5 items of seamless locomotive boiler tubes and flues, JIS-G3425-STL or AAR specification No. M-108-50 or approved equal.

7 items of seamless steel pipes for locomotives, JIS-G3421-ST30A or ASTM designation A106-52T grade "B" longitudinal or approved equal.

6 items of seamless black steel pipe JIS-G3432-SGP or AAR specification No. M-111-50 grade "B" or approved equal.

The issuing authority and address to which bids should be sent is the Central Trust of China, Purchasing Department, 68, Yen Ping Nan Lu, Taipei, Taiwan. The tender No. is GFA-5037. The closing date is April 7, 1959. Local representation is essential. The Board of Trade reference is ESB/7738/59.

From India:

(a) 8,800 roller bearing axle-boxes, complete with two sets of cylindrical roller bearings and relative fittings, inclusive of locking arrangements, for the 20-ton axle load on rail.

(b) 4,400 wheelsets, B.G., 20-ton capacity, completely assembled with solid wheels and axles, one metre dia. on tread, suitable for roller bearing axle-boxes.

The Issuing Authority is the Indian Railways. The tender No. is GP16. Bids should be sent to the Director, Railway Stores, Railway Board, State Entry Road, New Delhi. The closing dates are item (a) April 20, 1959, item (b) April 21, 1959. The Board of Trade reference is ESB/7637/59.

Further details regarding the above tender, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

NORTH EASTERN REGION DIESEL SERVICE BETWEEN MALTON AND WHITBY.—The North Eastern Region of British Railways is to introduce a diesel service between Malton and Whitby on April 6. With the exception of two trains in each direction all the services between Malton and Whitby will be operated by diesel units. A new through service will be provided in both directions between York and Whitby. These trains will also provide an additional weekday service in each direction between York and Malton.

Staff and Labour Matters

N.U.R. Pay Claim

The Transport Salaried Staffs' Association and the Associated Society of Locomotive Engineers & Firemen, at a meeting with the National Union of Railwaymen on March 26, decided not to support the N.U.R. claim for a substantial increase in rates of pay for its members employed in all sections of the British Transport Commission.

The two unions have decided that in the light of the present review of railway rates of pay now being undertaken by the Railway Pay Committee of Inquiry, it is not opportune at the present time to make further demands on the Commission for improved rates of pay.

N.U.R. Termination of Consultation Procedure

It is understood that the N.U.R.'s notice to the Transport Commission to terminate the Consultation Procedure shortly will be the subject of discussion between the three railway trade unions.

Notes and News

British Transport Commission Traffic Receipts.—The aggregate of British Railways coal and coke traffic receipts for Periods 1 and 2 of the current year was £20,203,000, which is £1,489,000, nearly £1,500,000, less than for the corresponding eight weeks of 1958, and not nearly £1,500 million, as was stated in error on page 294 of our March 13 issue.

Closures of Stations and Depots in London Midland Region.—British Railways, London Midland Region, announces that Stainton Mineral Siding, Dalton-in-Furness, will be closed for public use from April 6, and that traffic, except that for Barrow Quarries Limited, will be dealt

with at Dalton; Barrow Quarries traffic should continue to be consigned to Stainton for private sidings. From the same date Foryd Pier Goods Depot, near Rhyl, is to be closed; goods traffic will be dealt with at Rhyl. From May 4, Oldham Clegg Street, Park Bridge, Ashton Oldham Road, and Dukinfield Central Stations are to be closed for passengers and parcels.

Eastern Region Staff Training School Opened at Ilford.—British Railways, Eastern Region, staff training school at Ilford was officially opened on March 17. It is at present concerned with the training of drivers for diesel locomotives and of signal and telegraph linemen. Later, courses will include clerical duties and traffic telegraphy.

Television Train for Wembley Football International.—British Railways, Scottish Region, closed-circuit television train will make its first trip of the 1959 season on April 10 for the England v. Scotland football international at Wembley Stadium on April 11. A team of artistes will provide entertainment from a sound-proof studio in a van. Films will also be shown and music relayed from a tape recorder.

Faster Services between Midlands and East Anglian Coast Resorts.—Substantial accelerations are planned for several holiday trains between the Midlands and East Anglian resorts on Fridays and Saturdays on introduction of the summer timetable on June 15. Without the single line working necessary over the former Midland & Great Northern line, now closed, and with extended non-stop running, trains will be accelerated by up to 96 min. on the eastbound journey. Journey times between the Midlands and Cromer and Sheringham will be generally longer because of the extra distance via the Great Eastern route and of single track on the branch line. Examples of the extra mileage involved are: to Yarmouth 10, North Walsham 28, Cromer 41, and Sheringham 49. The 11.40 p.m. (Fridays) from Shirebrook to Yarmouth is to be

accelerated by 67 min. and the 10 a.m. (Saturdays) from Kings Norton to Yarmouth by 96 min. Westbound, the 9 a.m. (Saturdays) from Yarmouth to Derby is to be 85 min. faster, and the 12 noon (Saturdays) from Yarmouth to Shirebrook accelerated by 87 min.

London Midland Region Parcels Depot at Liverpool Wavertree.—Work started last week on the fourth British Railways, London Midland Region, depot for the speeding up of freight services. This is at Liverpool Wavertree where a new parcels depot is being built. Work is going ahead on similar depots at Manchester, Chester, and Oldham.

Permali Limited Film.—At a reception by Permali Limited on March 24 at the St. Stephen's Club, London, the guests included many railway engineers. A film, "Permali Progress," showed how the products of the Permali Group have been concentrated in the one modern factory at Gloucester. Mr. A. A. Heath, Managing Director of the company, addressed the meeting and the film was followed by a discussion and an exhibition of the company's new products.

London Midland Region "Condor" Freight Service.—British Railways, London Midland Region, has announced that during the first week of operation, March 16-21, its overnight "Condor" container train arrived on or before time every morning at both Hendon and Gushetfaulds (Glasgow). The containers were delivered to consignees' doors between 7.30 and 10.30 a.m. Among the types of traffic carried were textiles, confectionery, glass and electrical goods, and mattresses.

International Nickel Co. of Canada Ltd. in 1958.—Net earnings of The International Nickel Co. of Canada Ltd. and subsidiaries for the year ended December 31, 1958, were \$39,665,000. This compared with net earnings of \$86,141,000 in 1957. Net earnings for the fourth quarter of 1958 were \$9,344,000, compared with \$20,124,000 in the fourth quarter of the preceding year. The drop in 1958 earnings reflected the lower demand for nickel, sharply reduced prices and deliveries of platinum metals, lower prices for copper, and a strike against the company which stopped all production at the mines and plants in Ontario during the final three months of the year. In addition to the direct costs involved, the strike prevented the company from producing substantial quantities of copper, cobalt, iron ore, and other products which would have been readily saleable. Deliveries of nickel, which were not affected by the strike because of unsold stocks previously accumulated, were 84,000,000 lb. less than in 1957.

New Rates for Imports and Exports Through S. Wales Ports.—As announced in our February issue, British Railways, Western Region, will introduce as from May 1 new rates for merchandise, with certain exceptions, through the ports of Newport, Cardiff, Barry, Swansea, and Port Talbot, inclusive of rail conveyance within the docks, loading into wagon (imports), and unloading from wagon (exports). Transit shed services, shipping from quay to vessel, and receiving from vessel to quay, will continue to be excluded from the railway rate. The effect will be that on railborne traffic the dock labour charges for consignments passing through shed will be substantially reduced, and no dock labour charges will be in-

L.M. Region Electrification Work



Demolition of Edgeley tunnels, Stockport, by 30-cwt. drop hammer. The tunnels will be replaced by bridges as part of British Railways, London Midland Region, Crewe-Manchester electrification programme

currer when the traffic is handled direct from, or to, ship. Applications and enquiries may be made locally or direct to the Commercial Officer, British Railways, Western Region, Paddington, London, W.2; and details of dock charges can be readily obtained from the Dock Managers at the ports concerned.

Increased Sterling for Foreign Travel.—The maximum amount of sterling notes which travellers, resident and non-resident, may take out of the United Kingdom has been increased from £10 to £20. This may not be changed into foreign currency, but may be used by residents only on British ships, including cross-Channel steamers, and aircraft and for expenses in Britain, such as refreshments in boat trains.

B.T.C. Films Accepted for Film Festival.—Ten British Transport Commission films have been accepted for competitive showing at the second Festival of Films in the Service of Industry, which is being held at Harrogate on April 21-24. The subjects of the films include travel, research, holidays, waterways, training, and education. Further particulars and programme details of the Festival can be obtained from the Organising Secretary, Festival of Films in the Service of Industry, 3 Portman Chambers, 7-9 Baker Street, London, W.1.

British Railways Easter Passenger Traffic.—British Railways carried 453,000 passengers from the London termini in 1,529 long-distance trains on Thursday and Saturday of last week and on Easter Monday, or nearly 13,000 more passengers than on the corresponding days of the Easter weekend last year. During the holiday period, 15,000 more passengers travelled by rail to Southend and 6,000 more to Blackpool, compared with Easter, 1958, and 142 special trains for football spectators were run throughout all Regions.

Lewisham Accident Results in New Medical Emergency Procedure.—A comprehensive plan for medical arrangements in the event of any major accident is reported to have been approved by the South-East Metropolitan Regional Hospital Board. It embodies lessons learnt from the accident at Lewisham, British Railways, Southern Region, in December, 1957. Provisions include a communications link, preferably by radio telephone, from the scene of the accident to the hospital warned to receive casualties, available to the senior medical officer.

Altered Goods and Parcels Arrangements at Scottish Wayside Stations.—With the approval of the Transport Users' Consultative Committee for Scotland, alterations have been made in the facilities provided by British Railways, Scottish Region, at Abercainry, Perthshire; Colfin, Wigtownshire; and Cummertrees, Dumfriesshire. Abercainry goods and parcels station now deals only with traffic in full wagonloads, including livestock. Alternative facilities for parcels and other merchandise traffic by passenger train and for goods train traffic in less than wagonloads are available at Crieff. From April to September inclusive Abercainry is unstaffed and the stationmaster at Madderty is responsible for all traffic arrangements. From October to March staff will be in attendance at Abercainry. Colfin public freight siding has been closed, and alternative rail facilities are available at Stranraer Town. Cummertrees goods and parcels station now deals

only with traffic in full wagonloads. Alternative facilities for parcels and other merchandise traffic by passenger train and for goods train traffic in less than wagonloads are available at Annan.

London Midland Region News Sheet for Passengers.—British Railways, London Midland Region, is distributing to passengers in Manchester a special news sheet giving facts about the modernisation and electrification work now in progress and the effect this is having on train time-keeping. Items dealt with in the news sheet include the work at Oxford Road and Central Stations, Manchester, and a message from Mr. J. Royston, Divisional Traffic Manager.

Easter Course for B.T.C. Civil Engineers at Leeds University.—Twenty-five members of the civil engineering staff of the British Transport Commission, British Railways, London Transport, and British Waterways are undergoing a special post-graduate course at Leeds University during the Easter vacation. The course, which has been arranged by the Commission in association with the University, is residential, and the students will use the University's laboratories, lecture rooms and other resources. The curriculum is based on two main subjects, soil mechanics and prestressed concrete, and instruction will be given by senior members of the Commission's engineering staff as well as lecturers from the University Department of Civil Engineering. The principal lecturers and instructors are Professor R. H. Evans, and Messrs. R. D. Mackey and E. W. Bennett of Leeds University; Mr. J. S. Campbell, Assistant Civil Engineer (Works), British Railways Central Staff; and Mr. A. H. Toms, Research Assistant to the Chief Civil Engineer, Southern Region, British

Railways. Evening talks on subsidiary subjects will be given by visiting speakers, including Professor R. C. Coates of Nottingham University. Mr. J. Ratter, Member of the British Transport Commission, Mr. C. E. Dunton, Chief Civil Engineer, London Transport Executive, and Mr. M. G. Maycock, Chief Civil Engineer, Scottish Region, British Railways. Two visits to railway civil engineering works will also be arranged.

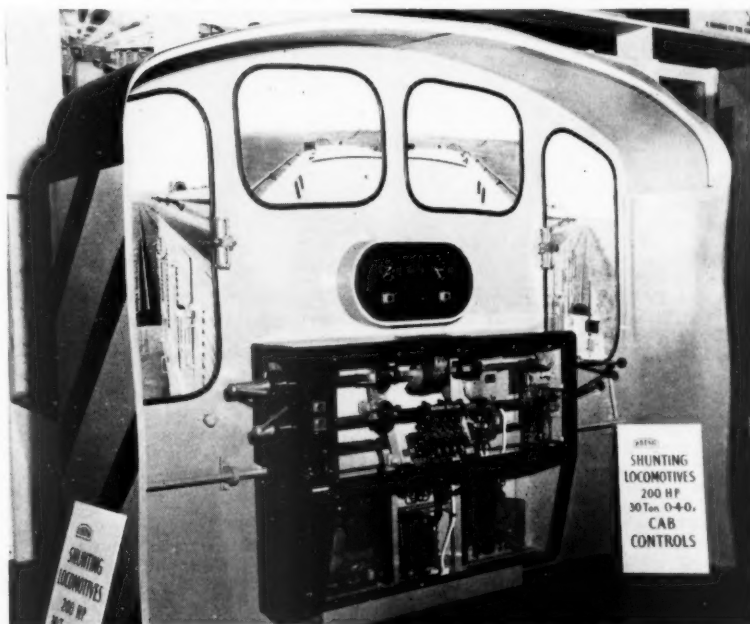
Institution of Locomotive Engineers: Summer Meeting in Scotland.—The summer meeting of the Institution of Locomotive Engineers will be held this year in Edinburgh from April 28 to 30. The meeting opens at 9 a.m. on April 28 at the North British Hotel, Waverley Station, Edinburgh, and will include a visit the same morning to the Falkirk Rolling Mills of the British Aluminium Co. Ltd. On April 29 a visit will be paid to the works of the North British Locomotive Co. Ltd., Glasgow. In the evening the summer meeting dinner will be held at the North British Hotel, Edinburgh. On Thursday morning, April 30, members will visit the works of Ferranti Limited, Ferry Road, Edinburgh. The summer meeting terminates after luncheon on April 30.

Forthcoming Meetings

April 7 (Tue.).—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreational Club, Ellis Court, Leeds City Station, at 7 p.m. Paper on "Railway weed control," by Mr. G. G. Fisher of the Chesterford Park Research Station.

April 8 (Wed.).—Permanent Way Institution,

Brush at the Electrical Engineers Exhibition



Mock-up of Brush Electrical Engineering Co. Ltd., 200-h.p. shunting locomotive cab, showing control equipment behind perspex panel, at the recent Electrical Engineers Exhibition, Earls Court, London

- tion, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road, London, N.W.1, at 6.30 p.m. Paper on "Drainage and stabilisation of track, cuttings and embankments on the German Federal Railways," by Herr A. Bethauser, Dipl. Ing., Deutsche Bundesbahn.
- April 9 (Thu.).—Institution of Railway Signal Engineers, at the Federation of British Industries, 21, Tothill Street, London, S.W.1, at 7 p.m. Annual general meeting.
- April 10 (Fri.).—British Railways, Western Region, London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Debate with the Federation of Railway Lecture & Debating Society, North Eastern Region: "That the organisation and methods of British Railways are unnecessarily elaborate."
- April 10 (Fri.).—Stephenson Locomotive Society, Scottish Area, at 25, Charlotte Square, Edinburgh, at 7 p.m. Paper on "Some thoughts on the products of Swindon," by Mr. A. F. Cook.
- April 10 (Fri.).—Railway Correspondence & Travel Society, Sussex & Kent Branch, at the Railway Hotel, Brighton, at 7 p.m. Paper on "The new Temple Mills Yard," by Mr. R. Kirkby.
- April 11 (Sat.).—The Stephenson Locomotive Society, Scottish Area, at 302, Buchanan Street, Glasgow, at 2.30 p.m. Paper on "Some thoughts on the products of Swindon," by Mr. A. F. Cook.
- April 11 (Sat.).—The Stephenson Locomotive Society, North Western Area, in the Conference Room, Liverpool Central Station, at 7.30 p.m. Paper on "Locomotives at Cambridge, 1909-1914: the end of an era," by Mr. E. M. S. Wood.
- April 11 (Sat.).—Railway Correspondence & Travel Society, South of England Branch, at the Y.M.C.A., Friar Street, Reading, at 6 p.m. Paper on "Dougald Drummond, the man and his work," by Mr. T. Clyde Britten.
- April 11 (Sat.).—Permanent Way Institution, Leeds & Bradford Section. Visit of Irish Section to Leeds for joint meeting.
- April 13 (Mon.).—Institute of Transport, at the Jarvis Hall (R.I.B.A.), 66, Portland Street, London, W.1, at 5.45 p.m. Brancker Memorial Lecture. "World peace through air transportation," by Captain E. V. Rickenbacker, Chairman of the Board, Eastern Air Lines, Inc.
- April 13 (Mon.).—The Railway Club, at 320, High Holborn, London, W.C.1, at 7 p.m. Talks by Mr. N. McCracken and Mr. E. J. T. G. Bagshawe.
- April 14 (Tue.).—Permanent Way Institution, York Section, in the Railway Institute, York, at 6.45 p.m. Paper on "Snow clearances," by Mr. J. M. Hauer, Netherlands Railways.
- April 15 (Wed.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, 1, Birdcage Walk, London, S.W.1, at 5.30 p.m. Paper on "Vehicle suspension and bogie design in relation to track conditions," by Mr. R. M. Hancock.
- April 15 (Wed.).—Institution of Railway Signal Engineers, Manchester Section, at the Dining Club, Hunt's Bank, Manchester, at 6.30 p.m. Paper on "Colour-light signalling principles, including the application of C.T.C.," by Mr. D. G. Parker.
- April 16 (Thu.).—Diesel Engineers & Users Association, at the Connaught Rooms, London, W.C.2. Annual luncheon.
- April 16 (Thu.).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. "Joint effort: The Story of a layout (Part 2)," a talk by Mr. P. D. McCann and Mr. H. Boucher.
- April 17 (Fri.).—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, Eversholt Street, N.W.1, at 7.15 p.m. Paper on "Dieselisation on the Western Region," by Mr. W. A. R. Creighton, Assistant Mechanical & Electrical Engineer, Western Region, Swindon.
- April 18 (Sat.).—Permanent Way Institution, London Section. Visit to new station at Banbury, Western Region. Joint visit with Birmingham Section.
- April 21 (Tue.).—Institute of Transport, Metropolitan Graduate & Student Society, 80, Portland Place, London, W.1, at 5.45 for 6.15 p.m. Transport forum.
- April 23 (Thu.).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. A talk by Mr. A. Hancox, "The North London Railway."
- April 24 (Fri.).—Crewe Pupils' and Apprentices' Association dinner at the Royal Automobile Club, London, S.W.1.
- April 25 (Sat.).—Permanent Way Institution, East Anglian Section, at Yarmouth, at 2.15 p.m. Paper on "Narrow-gauge railways of Italy," illustrated, by Mr. R. Shephard.
- April 27 (Mon.).—Institution of Railway Signal Engineers, Bristol Section, at Bristol Temple Meads Station, at 6 p.m. Annual general meeting and paper on "Modern trends in the design of signalling apparatus," by Mr. E. J. Harris, Westinghouse Brake & Signal Co. Ltd.
- April 28 (Tue.).—Institute of Transport, at the Connaught Rooms, Great Queen Street, W.C.2, at 12.30 for 1 p.m. Informal luncheon.

Railway Stock Market

Although confident expectations of Budget tax reductions continued to dominate sentiment in stock markets, there has been an undertone of caution. It is being suggested that in many cases the rises already shown in share values has discounted the expectation of a good Budget. Although buying has been rather cautious and selective, there has been little selling. Only a moderate amount of business passed in foreign railway stocks, but they were not entirely without movement. Buyers returned for Antofagasta, and compared with a week ago, the ordinary stock has firmed up from 12 to 12½ and the preference from 25 to 26½, on the theory that, taking the long view, the railway's fortunes are likely to improve, and that in the circumstances the heavy fall in these stocks appears to have been carried too far. Chilean Northern 5 per cent debentures changed hands at 55½. United of Havana second income stock remained at 6. San Paulo Railway 3s. units were again quoted at 2s., and Brazil Railway bonds were 6½, with Costa Rica ordinary stock 14 and the first debentures 75½.

West of India Portuguese capital stock also kept its rise, changing hands up to 106, and in other directions, Nyasaland Railways shares have been inclined to improve, business up to 12s. 10½d. being recorded.

Canadian Pacific eased from 55½ to 54½, and the 4 per cent preference and 4 per cent debentures were each fractionally easier at 54½ and 65½ respectively. White Pass shares have changed hands around \$13½. Gedaref Railway & Development (Sudan) 5 per cent guaranteed debentures were again quoted at 95 and business has been recorded at this level.

Among shares of locomotive builders and engineers, G. D. Peters were a good feature on further consideration of the results and were dealt in up to 27s. On the other hand, Birmingham Wagon attracted some profit-taking and were 20s. 3d. after 21s. 3d. Moreover, North British Locomotive failed to hold an earlier small improvement, receding subsequently to 10s. on wider recognition that although earning power is likely to show good recovery in time, a return to the dividend stage is some way ahead. Beyer Peacock 5s. shares firmed up slightly to 8s. and the rise in Charles Roberts 5s. shares continued with a further gain at 11s. 1½d. Grouse Repairs 5s. shares were 9s. and Gloucester Wagon 10s. shares 18s. 10d. Westinghouse Brake have been easier for choice at 42s. 9d. though the prevailing view is that there are higher dividend prospects.

Associated Electrical were firm at 55s. 10d. on the 21½ per cent increase in group sales, revealed by the annual report, to the new high level of £181,500,000, which indicates the progressive policy followed: expansion in turnover more than offset the effect of rising costs. English Electric were 64s. and General Electric 31s. 9d. Business around 13s. was recorded in Crompton Parkinson 5s. shares. B.I. Cables have been firmer at 48s. 3d., and in other directions, Johnson & Phillips at 22s. 6d. firmed up after an earlier decline. Elsewhere, British Timken reached the new high level of 66s. 9d. F. Perkins 10s. shares were quoted at 17s. Dowty Group 10s. shares were 40s. 10½d. with the new shares 41s., and Ransomes & Marles 5s. shares held steady at 17s. 3d. Renold Chain were 43s. 9d. but Federated Foundries at 33s. 6d. lost a little of their recent advance, while Pressed Steel 5s. shares, after touching the new high level of 27s., eased to 26s. 9d. Stone-Platt Industries have held firm at 44s. 7½d. but Babcock & Wilcox were 49s. 6d. after 50s., while Vickers at 31s. 6d. eased a few pence, as did British Oxygen at 55s. A large business was again transacted in steel shares on hopeful views of general election prospects, and gains in this section were mainly held on balance, despite minor fluctuations from day to day. Option business in steel shares was also on a considerable scale.

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